Introduction

Intimate partner violence (IPV) is defined as an actual or threatened abuse by an intimate partner that may be physical, sexual, psychological, or emotional in nature. Each year approximately 1.5 million women in the United States report some form of sexual or physical assault by an intimate partner; it is estimated that approximately 324,000 women are pregnant when violence occurs. The violence against women is a global health problem that occurs among all races and all socioeconomic strata [1-3]. Pregnancy IPV is a significant problem worldwide, with rates varying significantly by country and maternal risk factors. Pregnancy IPV is associated with adverse newborn outcomes, including low birth weight (LBW) and preterm birth. Domestic violence, often exerted by the spouse, includes various types of physical, sexual, and psychological traumas [1,2]. This fundamental universal health problem was introduced as an epidemic 20 years ago. A reduction in IPV was announced as a goal of health service providers in 2010 [1]. Investigations in different countries showed that 15-71% of women had experienced physical and sexual violence in their lifetime [1,3]. In Iran, various types of violence comprise 27-83% [2]. Given that most of the violence victims are women of reproductive age [3-6], the occurrence of the violence may increase during pregnancy by 1-20% as reported by previous studies [1,4]. Women victim of domestic violence experience more medical and psychosocial complications than other women [7-10]. Different reports revealed that the IPV during pregnancy associated with unfavorable pregnancy outcomes [5,9]. Low birth weight (LBW) is one of the complications threatening pregnant women victim of violence [4,5]. There are numerous mechanisms for defining the correlation between experience of violence and LBW and other unfavorable outcomes of pregnancy [1]. Certain outcomes result from direct physical violence like trauma to the abdomen that can lead to premature labor, premature rupture of membranes (PROM), and placental abortion, and these complications themselves may cause birth weight lower than 2500 g [1]. Reports of two other smaller scale studies also include significant associations between physical IPV during pregnancy and low birth weight Furthermore, mothers’ medical diseases such as hypertension and gestational diabetes in pregnant women victim of domestic violence are more than those in other women [6]. These diseases can cause premature labor, fetal growth retardation (FGR), and consequently LBW [1,6]. Victim women of domestic violence are also exposed to the risk of psychological diseases like depression and anxiety [2,11]. Moreover, stress causes the release of catecholamine, beta-endorphin, and cortisol through neuroendocrine axis, and these hormones cause vasospassm, fetal asphyxia, and intrauterine growth retardation (IUGR). The release of prostaglandins causes premature rupture of membranes and preterm delivery [9,12]. Despite the presentation of this mechanism, no definite correlation has been proved between IPV and LBW. Considering the importance of infants’ birth weight and its effect on mortality rate, which is an effective index in determining health status of a country, and the unproved effect of violence on birth weight, the researchers decided to conduct a study on the correlation between physical, sexual, and psychological violence and birth weight in women admitted to postpartum ward of three major hospitals of Zahedan, Iran in 2008-2009.
Materials and Methods

This was a correlation- descriptive analytical study. The research places were included post-partum wards of Ali-Ebn-Abtaleb, Tamin-Ejtemai, and Nabi-ye Akram hospitals, Zahedan, Iran in 2008-2009. These hospitals are public and major hospitals that majority of female clients were referred for seeking medical cares.

Sample size and sampling methods

Regarding 5.5-6.6% prevalence of violence, 5.8% prevalence of LBW [12], confidence level of 95%, and power 80% and error rate of 5%, the sample size was estimated 843 participants. The samples were selected using multistage random-quota sampling method. The number of samples in each hospital was estimated in proportion to the number of childbirths in that hospital. The quota was determined based on mean childbirths in each hospital in one month. Therefore, at the Tamin-Ajtemai Hospital (342 questionnaires), Ali-Ibn-Abtaleb Hospital (300), and Nabi-ye Akram Hospital(201) were filled out by samples.

Including & excluding criteria

The women included in the study had full-term (37-42w) singleton pregnancy, and at least four hours had passed from their childbirth. The women with history of medical diseases, smoking, and violence by one other than the partner were excluded.

Instruments validity & reliability

The data were collected using a self-administered questionnaire. It consisted of four parts including eight items for demographic information, seven items for midwifery information, some items for neonate characteristic birth weight, and violence-related questions. Violence-related questionnaire consisted of four items for physical violence (yes/no), five times for psychological violence (yes/no), and five items for sexual violence (yes/no). The validity of the questionnaire was determined with content validity and face validity by an expert. The reliability of the questionnaire was determined as 0.71 by Cronbach’s alpha.

Selected participants

The researchers went to postpartum wards of the hospitals and selected eligible women who based on three items for physical violence (1- Have you been beaten by your husband during the last year or your current pregnancy?), psychological violence (2- Are you afraid of your husband?), and sexual violence (3- Have you ever been forced to have sex with your husband?) for different types of violence. Participation was voluntary and the responses were kept unidentified. The women were enrolled if they gave a positive response to any of the following it, then asked the response of the other items of questionnaire.

Data analysis

All data were tabulated and analyzed using SPSS for Windows) Version 18.0, SPSS Inc., Evenston, Illinois). Mean and standard deviations of the scores were calculated. Initially, the Kolmogorov-Smirnov test was performed to identify whether the study variables had normal distribution. Then, the Chi-square and t-test were used. All the tests were performed at significance level of 0.05.

Results

Mean age of the 843 studied women was 26.2 years, of which, 15.8% and 54.7% were adolescent and adult women, respectively. Maximum level of literacy in mothers and fathers were high school education. Minimum and maximum percentages of LBW were observed in women with high school education and women with middle school education, respectively, as 139 women (16.5%) had a history of LBW. In this study, 80.3% of women were housewife, and 310 women (36.8%) had unwanted pregnancy. In terms of income Emad Committee were 7% under coverage and 69% of women stated that their family income was sufficient. In respect to the prenatal care, totally 87.7% of women received prenatal care, and 63.8% of them received the care more than four times. The results showed that 207 women (24.6%) had experienced physical violence during the last year, and 128 women (15.2%) had experienced physical violence during their pregnancy. In this study, physical violence associated with LBW (Table 1).

The analyses revealed that maximum violence intensity was related to threatening, and minimum intensity of physical violence was related to permanent damage or the use of guns and cold weapons and the resulted wounds (Figure 1).

The results showed that the most frequent type of psychological violence was “being offended and insulted,” and the least frequent type of psychological violence was “little attention due to the child’s sex”. In this study, physical or emotional violence used by the husband was important for 67.5% of women. Only psychological violence affected on birth weight (Table 2). Examining the study samples revealed that the most frequent sexual violence was “forced to have sexual intercourse during menstruation.” Certain types of violence associated with LBW (Table 3). In general, mean weight of the infants in the group victim of violence was 247.1 g lower than that of infants in the group no victim of violence. However, the independent t test did not show any significant difference in mean weight of the two groups (P>0.05) (Table 4).

Discussion

In this study, 24.6% of women experienced violence during the last year, and 15.2% of them experienced violence during pregnancy. These percentages show a downward trend indicating the special attention of the husbands to their wives during pregnancy. The above result is comparable to that of studies performed in other parts of the world, based on continents. In general, the prevalence of violence in the USA and developing countries is 1-20% and 4-28%, respectively [13]. There are different statistics (8.5-50%) in Iran [14-17], even in one province; as the prevalence of mild and severe types of physical violence in Northeast (Mashhad) of Iran were 0.3% to 93.1%, and respectively [18] maybe due to the method of questioning, secrecy regarding cultural context of the region, type of measurement instrument, sample size, etc. In other Asian countries like Hong Kong, 296 women (9.1%) experienced violence during one year, of

<table>
<thead>
<tr>
<th>Violence past year</th>
<th>Violence during pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>N(%)</td>
<td>N(%)</td>
</tr>
<tr>
<td>≥ 2500</td>
<td>173(83.6)</td>
</tr>
<tr>
<td>&lt;2500</td>
<td>34(16.4)</td>
</tr>
</tbody>
</table>

Table 1: The association of physical violence and birth weight.
Figure 1: Types of intensity physical violence.

<table>
<thead>
<tr>
<th>Type of violence</th>
<th>Birth weight ≥ 2500</th>
<th>N (%)</th>
<th>Birth weight &lt; 2500</th>
<th>N (%)</th>
<th>Chi Square test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low attention to the child sex</td>
<td>63(79.7)</td>
<td></td>
<td>46(86.8)</td>
<td></td>
<td>P=0.84, χ²=0.04, df=1</td>
</tr>
<tr>
<td>Threatened to divorce</td>
<td>125(82.5)</td>
<td></td>
<td>26(17.2)</td>
<td></td>
<td>P=0.92, χ²=4.05, df=1</td>
</tr>
<tr>
<td>Disrespect &amp; insult in front of people</td>
<td>125(82.5)</td>
<td></td>
<td>26(17.2)</td>
<td></td>
<td>P=0.92, χ²=4.05, df=1</td>
</tr>
<tr>
<td>Insulting &amp; cursing</td>
<td>233(85)</td>
<td></td>
<td>41(15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: The association of psychological violence with birth weight.

<table>
<thead>
<tr>
<th>Type of violence</th>
<th>Birth weight ≥ 2500</th>
<th>N (%)</th>
<th>Birth weight &lt; 2500</th>
<th>N (%)</th>
<th>Chi Square test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force to any other type of sexual violence</td>
<td>61(78.2)</td>
<td></td>
<td>218(85.5)</td>
<td></td>
<td>P=0.008, χ²=7.10, df=1</td>
</tr>
<tr>
<td>Force to intercourse during pregnancy</td>
<td>25(89.3)</td>
<td></td>
<td>36(76.6)</td>
<td></td>
<td>P=0.20, χ²=1.59, df=1</td>
</tr>
<tr>
<td>Force to intercourse during menstruation</td>
<td>11(23.4)</td>
<td></td>
<td>18(5.5)</td>
<td></td>
<td>P=0.01, χ²=5.63, df=1</td>
</tr>
<tr>
<td>Force to have oral or rectal intercourse</td>
<td>32(14.5)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Table 3: Determining the associate of a variety of sexual violence with LBW.

<table>
<thead>
<tr>
<th>History of violence during last year</th>
<th>Variable (index)</th>
<th>T test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (n=207)</td>
<td>Mean</td>
<td>2872.5</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>500.4</td>
</tr>
<tr>
<td>No (n=636)</td>
<td>Mean</td>
<td>3119.7</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>2063.1</td>
</tr>
</tbody>
</table>

Table 4: Mean and standard deviation of birth weight in two groups (violence/no violence).

which, 80 women (27%) were being abused physically or sexually during pregnancy [13]. In China, the violence during pregnancy and the violence one year before pregnancy were reported as 4.3% and 9.1%, respectively, as the violence before pregnancy was a strong factor of using violence during pregnancy [19,20]. The result agrees with this study.

In the present study, physical or psychological violence by husband was important 67.5% by viewpoints of women. The result was comparable with a study had conducted in South and Southeast of Tehran, as the women in Tehran found the emotional violence as the more important one than other types of violence [21]. In Northern Iran (Babol), 71% of women mentioned psychological
The non concurrence of the result of the present study with that of certain studies may be due to the cultural context of women in Zahedan. The women's non-confidence to disclosure has been proved also in Northwest and West America, as only 2% of 1000 women under screening revealed their experience of violence during pregnancy. It seems that there are barriers affecting the declaration of violence or declaration of violence severity, of which, fear has been reported as a barrier in the USA [31]. In the present study, 27.5% of women feared of their husbands, of which, 12.9% had infants with weight lower than 2.5 kg.

In this study Some types of violence correlated with birth weight Similar other studies [32], and a study only showed the correlation with physical violence [25]. In the islands of the USA (South Caroline), physical violence before pregnancy had adverse effects on the pregnancy outcomes including LBW [33]. This result conforms to that of another study in the USA [34]. In other studies, the violence had affected pregnancy outcomes if it occurred around or during pregnancy [35]. Boy's study showed the correlation of physical and psychological violence with LBW, and a review study in the USA found the LBW as an adverse effect [36]. In a review and meta-analytical article in Canada, physical violence was determined as an important cause of LBW [37]. The correlation of physical violence with unfavorable outcomes of pregnancy has been proved in Asian countries (Bangladesh) [36,38]. In Bangladesh, the correlation of sexual violence with unfavorable outcomes of pregnancy was proved [38]. In this respect, psychological and sexual violence affect the fetus more than other types of violence, which necessitates special attention. Self-care education is emphasized because it leads in active role in treatment process and accepting responsibility for individual health [39]. Social networks are used for behavior improvement, educational performance and other self-care education [40].

A challenge for midwives, in relation to safe motherhood, is to use appropriate strategies, such as collaborative learning, positive deviations, and so forth, in order to lead [mothers] to the safe motherhood in while screening and care providing. That is the objective that should be planned and implemented in curriculum of the comprehensive health plan of universities according to the Iranian leader's recommendation. It is hoped that more effects into these patients bring appropriate treatment methods to promote the patients' life quality [41].

The limitation was in this study, women often not talked about threatening injuries. The reason of non-disclosure may be their fear although the study performed on all Iran's provinces showed that Sistan-Balouchestan province had the lowest percentage of injuries resulting in murder [24]. Thus, the occurrence of serious injuries must be less probable. Moreover, regarding the cultural context of the province, men pay more attention to their wife during pregnancy.

Finally, 274 women experiencing the psychological violence of "being offended and insulted", 255 women experiencing the physical violence of "being forced to have sex during pregnancy," 207 women experiencing sexual violence during the previous year, and 128 women experiencing sexual violence during pregnancy. In this respect, the psychological violence was the most frequent type of violence in Zahedan. The result of the study indicated that mean birth weight in the group victim of violence was 247.1 g lower than that of mean birth weight in the group no victim of violence. However, the independent t-test did not show any significant difference in mean weight of the two groups (P>0.05).
Ethical Considerations

The written consent letter was taken from Postpartum Wards and the managers of hospitals for study. The participants announced her consents orally and completed questionnaires. Ethics Committee of Zahedan University of Medical Sciences has approved this research.

Acknowledgment

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References