

**Influence of intimate partner violence during pregnancy on fear of childbirth**

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### Abstract

Objective: Women are at increased risk of intimate partner violence (IPV) during pregnancy. This may impact women's positive anticipation for birth. Negative feelings around birth often translate to a fear of childbirth. Our aim was to examine the prevalence IPV and whether physical, sexual, psychological IPV during pregnancy predicts fear of childbirth among Iranian pregnant women. Method: A population-based cross sectional study was conducted in North-East Iran. Pregnant women (n=174) at least 14 weeks gestation attending health centers were selected for inclusion through a stratified sampling method. IPV, fear of birth, state and trait anxiety and socio-demographic variables were collected using validated instruments. To achieve the final models the Bayesian information criterion was used. A p value of <.05 was considered statistically significant. Results: Seventy-three percent of women reported experiencing IPV within their current pregnancy. Fear of birth was prevalent (61.5%). Logistic regression analysis revealed that after adjusting for confounding factors, in nulliparous physical IPV significantly predicted fear of birth (adjusted OR=12.15;95%CI, 1.33,110.96) while, in multiparous psychological IPV associated inversely with fear of birth (adjusted OR=.18; 95% CI, .04,.73). For all participants, physical IPV increased the chance of fear of birth, (adjusted OR=2.47; 95%CI, 1.01, 6.02). Conclusion: All pregnant women experiencing physical violence had a higher chance of fear of birth. Screening programs for fear of birth and IPV need to be implemented in particular for nulliparous women. Providing continuity of midwifery care and family therapy may be strategies for early support to reduce IPV to pregnant women.

<b>Keywords</b>	Intimate partner violence; pregnancy; fear of childbirth; Iran
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## Submission Files Included in this PDF

### File Name [File Type]

cover letter Final 4.8.17.docx [Cover Letter]

Response to reviewers Final 4.8.17.docx [Response to Reviewers]

highlights.docx [Highlights]

title page .docx [Title Page (with Author Details)]

main text Final 4.8.17.docx [Manuscript File]

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## Research Data Related to this Submission

There are no linked research data sets for this submission. The following reason is given:  
Data will be made available on request

Professor Margareta Larsson  
Deputy Editor  
Journal of Sexual & Reproductive HealthCare

Dear Professor Margareta Larsson

It would be our honor to resubmit for publication the revised version of manuscript ID SRHC\_2017\_43 entitled "Influence of intimate partner violence during pregnancy on fear of childbirth"

We are grateful for the time and efforts provided by the editor and reviewers in reviewing and presenting insightful recommendations. We have addressed all issues indicated in the review report, and believe the revised version meets the journal publication requirements.

One of the substantial concerns raised was related to the frequency of fear of childbirth within the questionnaire by item. We have added a table (3) to show information reported in the results section.

Other most common concerns raised by one of the reviewers were a difference in sample size between numbers of IPV and fear of childbirth in table 1 and 2. We have removed 2 cases with missed information that resulted in a total sample size of 174. Following this, some minor changes in tables 1 and 2 and also clarification within the text have been made.

Yours Sincerely

Jocelyn Toohill (on behalf of team)

<b>Reviewer1</b>	
<b>Comments</b>	<b>Response</b>
<p><b>Injury from IPV during pregnancy:</b></p> <p>The objective in the abstract states that the study examines the effect of “injury from IPV during pregnancy” in addition to physical, sexual and psychological. However, “injury from IPV during pregnancy” is not included in the stated aim in the main text. Results related to injury from IPV during pregnancy are not reported either in the text or in the tables apart from the prevalence of all “four types of IPV” (last line under “Rates of IPV”). If the authors decide to include the dimension of ‘injury from IPV during pregnancy’ this should be included in all the analyses, and reported and discussed accordingly.</p>	<p>Thanks so much for these comments.</p> <p>Injury from IPV during pregnancy was mistakenly included in the abstract and has been removed.</p>
<p><b>Setting:</b> Please state if the five health districts are similar in size. How many health centres did the health districts include? Was the sampling done in proportion to the size of the health districts?</p>	<p>Thank you. This section has been amended. Similarity in size and proportion to the size was added.</p> <p>There are 12-13 health centers in each district.</p>
<p><b>Measures:</b> The Revised Conflict Tactics Scale (CTS2) includes information on IPV over a period of 12 months. Hence CTS2 does not necessarily capture IPV only during pregnancy but also prior to it. This risks misclassification of exposure in the study. The study aim can be revised to include IPV prior to pregnancy and during pregnancy.</p>	<p>Thank you. We asked participants to answer the questions just for the pregnancy period and not 12 months. This detail has been added to the text.</p>
<p><b>Results:</b> The authors report the response rate to be 88% although it seems to be 83.8% as the response rate should be based upon the total number of women invited to the study and not only those who accepted to participate.</p>	<p>Thank you. This has been corrected.</p>
<p>The frequencies of <u>IPV</u> and <u>Fear of childbirth</u> do not add up to the same number across the background characteristics (Table 1). E.g the frequency of IPV varies between 108 and 128; in case of fear of childbirth, it is 100-107. The differences are probably due to missing information. It is advisable to include only those respondents for whom complete information is available to achieve a uniform sample for all the</p>	<p>2 cases with missed information were moved and table 1 and 2 were amended with very small changes. Total sample size was 174.</p>

analyses.	
It is not clear why the regression analyses are disaggregated by nulliparous and multiparous. If this was part of the aim of the study then it should be stated in the objective. The background information should also include a motivation for the disaggregation.	We firstly ran regression analysis separately because of different confounders in each group. Number of previous deliveries and experience of last delivery were confounders just for multiparous.
Table 1: In order to know the prevalence of IPV and fear of childbirth, calculate column percentage rather than row percentage.	Respectfully, as IPV and fear of childbirth are mentioned in the top columns in table 1, in order to have prevalence of IPV and fear of childbirth we should present within row percentages which is what we already did.
<b>Table 3:</b> Specify which variables the results are adjusted for. The confidence interval of the relationship between physical IPV and Nulliparous is very wide (1.33-111.0) indicating low reliability of the data. This should be discussed. State the sample size included in the analyses.	Totally, Age and state-trait anxiety, the number of previous births and experience of previous birth were considered as confounders that the results were adjusted for. Information has been mentioned in “data analysis section”.  This wide interval can be due to small sample size in this group. Explanation related to this has been added within the text.
<b>Discussion:</b>  In the discussion section (first paragraph), it is stated: “Based on our findings it seems that Iranian pregnant women are substantially more likely to experience IPV during pregnancy in comparison to some other populations”. As commented above, since the use of CTS2 involves the exposure period of 12 months, using this scale does not limit assessment of IPV to only the pregnancy period but also prior to it. Hence, a conclusion regarding IPV <u>during pregnancy</u> cannot be made from the data of the current study.	Respectfully, as mentioned above, we limited questions to the pregnancy period.
On page 9, the authors claim that the women’s fear of childbirth in the study is explained by their worry about fetal neonatal health, although no data is presented on this. The authors need to present the data if such a conclusion is to be drawn.	Data on questionnaire by item was added to table 3 and some explanation across the text.
Page 10: It is written that “physical IPV showed a significant effect on <u>increasing</u> fear of childbirth”.	Thank you. It is revised.

<p>Since this is a cross-sectional study in which Odds Ratios have been calculated, reformulate to write that physical IPV showed an <u>increased likelihood of fear of childbirth</u> rather than <u>increasing fear of childbirth</u>.</p>	
<p><b>References:</b></p> <p>The number of references is too many.</p> <p>The reference list is not structured consistently. For example, author/organisation name is missing from some references, e.g. ref no.s 17, 18, 45. In reference number 26, some of the authors' names and journal name are written in capital letters. Make it consistent with the rest of the list.</p>	<p>We acknowledge the number of references in the manuscript and believe they provide valid purpose within the paper.</p> <p>They have been amended in the references list.</p>
<p>Check punctuation, spellings and grammar throughout the manuscript.</p> <ul style="list-style-type: none"> <li>• Change "housekeeper" to "home-maker" in the text and table.</li> <li>• Write out acronyms when used the first time, e.g. CS in the last sentence of the discussion section.</li> </ul>	<p>Reviewed and updated.</p> <p>Amended.</p> <p>Amended.</p>
<p><b>Reviewer 2</b></p>	
<p>Comments</p>	<p>Response</p>
<p>In the Discussion section, the authors raise for the first time the question of whether the childbirth fear measure is capturing fear of the birth process or fear of discovering at birth that the child is not healthy. They cite "data not shown" in the Results as evidence that most of the women endorsed fears of problems with their babies' wellbeing. It makes sense that women who have been victimized by physical IPV would be concerned about the ramifications of abuse on their babies. It would be very helpful to see the breakdown of items endorsed on the fear of childbirth scale or to look at those items that were not related to child health concerns, as this seems to be measuring something conceptually quite different than what was articulated in the introduction and methods sections.</p>	<p>Thanks for your suggestion. We added a table showing frequency of fear of childbirth items (table3). This questionnaire comprises all important aspects of fear of childbirth with more focus on vaginal delivery. We respectfully believe there is consistency between what was measured and what is articulated throughout the document.</p>

Additionally, there seems to be an error in the total adjusted multivariate column of Table 3, which reports the same results for psychological and sexual IPV.

Finally, the clinical implications cite further screening as being required. However, it seems that previous research (and this study) has well established that the prevalence of IPV during pregnancy is extremely high (even normative) in Iran. Screening seems an insufficient implication and perhaps the authors have suggestions of interventions that could be accomplished in and out of the clinical setting to address this widespread issue.

It is correct. With considering three decimal places, there are very minor difference between them.

**Sexual IPV OR (95%CI)= .726(350-1.506),**  
**Psychological IPV OR (95%CI)= .727(.352-1.501).**  
For more clarification, we changed theme to the three decimal places in table 4.

Thanks for this recommendation.  
We had outlined as an Intervention that continuity of midwifery care across the continuum be provided but additionally we have suggested and included in the text that family therapy cpuld also be considered.

- Prevalence of IPV and fear of birth is high among Iranian pregnant women.
- In nullipara, physical IPV significantly increases chance of experiencing fear of childbirth.
- In multipara, psychological IPV is inversely associated with fear of birth.
- Regardless of parity, physical IPV is linked to a significant increase in level of fear.
- Screening for IPV and fear of birth across the duration of pregnancy is recommended.

# **Influence of intimate partner violence during pregnancy on fear of childbirth**

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- 2- Dr Jocelyn Toohill: PhD, is an Associate Professor School of Nursing and Midwifery, Griffith University.
- 3- Dr Jocelyn Toohill: is advisor to the Chief Nursing Officer, Queensland Health, Brisbane, Australia
- 4- Arash Akaberi: Msc, is a biostatistician in Clinical Epidemiology center, LDI, McGill University.
- 5- BibiMarzie HashemiAsl: Msc, is a Midwife working at Samen Health Center, Mashhad University of Medical Sciences, Iran

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**Declaration of interest:** The authors report no conflicts of interest.

## **Influence of intimate partner violence during pregnancy on fear of childbirth**

**Objective:** Women are at increased risk of intimate partner violence (IPV) during pregnancy. This may impact women's positive anticipation for birth. Negative feelings around birth often translate to a fear of childbirth. Our aim was to examine the prevalence IPV and whether physical, sexual, psychological IPV during pregnancy predicts fear of childbirth among Iranian pregnant women.

**Method:** A population-based cross sectional study was conducted in North-East Iran. Pregnant women (n=174) at least 14 weeks gestation attending health centers were selected for inclusion through a stratified sampling method. IPV, fear of birth, state and trait anxiety and socio-demographic variables were collected using validated instruments. To achieve the final models the Bayesian information criterion was used. A p value of <.05 was considered statistically significant.

**Results:** Seventy-three percent of women reported experiencing IPV at least once within their current pregnancy. Fear of birth was prevalent (61.5%). Logistic regression analysis revealed that after adjusting for confounding factors, in nulliparous physical IPV significantly predicted fear of birth (adjusted OR=12.15;95%CI, 1.33,110.96) while, in multiparous psychological IPV associated inversely with fear of birth (adjusted OR=.18; 95% CI, .04,.73). For all participants, physical IPV increased the chance of fear of birth, (adjusted OR=2.47; 95%CI, 1.01, 6.02).

**Conclusion:** All pregnant women experiencing physical violence had a higher chance of fear of birth. Screening programs for fear of birth and IPV need to be implemented in particular for nulliparous women. Providing continuity of midwifery care and family therapy may be strategies for early support to reduce IPV to pregnant women.

**Key words:** Intimate partner violence; pregnancy; fear of childbirth; Iran

## **Introduction**

Intimate partner violence (IPV) against women is recognized globally as a significant health problem (1). IPV is defined as any type of physical violence, sexual violence, stalking and psychological aggression (including coercive tactics) by a current or former intimate partner(1). Women are at risk during pregnancy of being exposed to IPV(2). In a study of 19 countries, the prevalence of intimate partner violence in pregnancy ranged from a low of 1.8% in Denmark to a high of 13.5% in Uganda (2). For many women, IPV initially starts during pregnancy(3). Variation in reported prevalence may be due to recall response bias, cultural tolerance, or personal reasons such as embarrassment or repercussions of reporting(2). IPV has been found to impact women's emotional well-being and adaption to parenting. Pregnant women experiencing violence are more likely to report higher levels of depressive symptoms, anxiety, and post-traumatic stress disorder, a lower level of mother to infant attachment and reduced rates of breastfeeding compared to non-exposed women(4-6). Psychological problems such as depression and anxiety before and following birth are also associated with severe fear of childbirth (7, 8). In developed countries poor psychosocial outcomes are recognized as a major contributor to perinatal maternal mortality rates (9, 10). Relatively few studies have explored the impact of violence on fear of childbirth. Around one in five pregnant women experience moderate levels of childbirth fear, and 10% of women suffer severe fear of childbirth(11). Women's fear can effect sleep and a preoccupation with birth can have an adverse impact on daily functioning (12, 13). Furthermore, fear of birth can contribute to higher rates of maternal request for caesarean birth and also higher incidence of emergency caesarean due to protracted labor or clinicians' concerns for a woman's coping capacity (14, 15).

## **Antenatal Care in Iran**

Antenatal care in Iran is integrated into primary health services and includes antenatal, labor and birth, postnatal and emergency obstetric care for women and their infants. Services are provided by certified midwives at health centers and hospitals. Almost 98% of women receive at least six visits during pregnancy(16). Mechanisms for optimizing

and monitoring maternal care services include a national maternal mortality surveillance system; integrated management of pregnancy and childbirth across services, mother-friendly accredited hospitals, trained skilled birth attendants for deprived and remote regions, and also a program for strengthening the national family planning program(16). Based on the United Nations Population Fund, and the Population Reference Bureau report (2010), approximately 97% of births are performed by qualified birth personnel(17). These policies and programs have led to a dramatic decrease in Iran's maternal mortality rate, reaching 25:100,000. This indicates Iran has met their MDG 5-A targets with 80% improvement in maternal mortality rate from 1990 to 2015(18). Likewise, a remarkable reduction in infant mortality rate has been achieved, from 45 in 1990 to 13:1000 live births in 2015(19). However, despite these noticeable advancements, high rates of caesarean birth remain problematic in Iran. Based on a recent meta-analysis of 34 studies, the rate of caesarean in Iran is 48 %, and ranged from 16.2% to 66.5% between cities.

Fear of normal birth has been identified as an underlying cause for the high caesarean section rates in Iran(20). Studies have reported that 48% of Iranian primigravidae experienced severe fear of childbirth. Fear of birth was significantly linked to psychosocial characteristics such as state and trait anxiety, perceived stress as well as high requests (62.6%) for cesarean (21-23) . In terms of IPV during pregnancy, a systematic review and meta-analysis revealed that 23% of Iranian women experienced physical violence and 44% reported psychological IPV during pregnancy(24).

These findings show that despite many significant improvements in maternity care in Iran, psychosocial problems particularly IPV during pregnancy and fear of childbirth are still high. Although fear of childbirth and IPV during pregnancy have been considered from different perspectives over recent decades, there is no study taking into account the impact of IPV during pregnancy on fear of childbirth. Therefore, this study aimed to assess whether physical, sexual, psychological IPV during pregnancy predicts fear of childbirth among Iranian pregnant women.

## **Method**

### *Design*

We conducted a population-based cross-sectional study with a convenience sample of pregnant women in North-Eastern Iran.

### *Setting*

In Mashhad, there are five health districts each providing care to a similar size population within a number of health centres (approximately 12-13 centres). In each district, one health centre was selected via cluster sampling and invited to participate based proportionally to the population size of pregnant women in that district

### *Participants*

Pregnant women who met inclusion criteria were invited to the study in proportion to the population size of pregnant women. Inclusion criteria included being Farsi-speaking, literate and Iranian nationality, age from 18 to 40 years old, having a low-risk singleton pregnancy with a gestational age more than 14 weeks, no history of alcohol and/or drug abuse and also not suffering from any major psychological disorder over the past year. We used a sample size estimation method for correlation coefficient based on a pilot study. With a confidence level of 95% and power of 90%, the estimated sample size was 170.

### *Measures:*

A survey including the following self-administered questionnaires was used. Measures included:

*Revised Conflict tactics scale(CTS2)*: this instrument investigates prevalence and types of IPV: Psychological Aggression (8 items), Physical Assault (12 items), Sexual Coercion (7 items), and Injury (6 items) (25). There are 6 categories of responses ranging from "0 = has never happened" to "6 = more than 20 times over a period of the recent 12 months. We limited the questions to the pregnancy period. The prevalence variable is 0 or 1 dichotomy, with a score of 1 assigned if one or more of the acts in the scale occurred. In other words, an affirmative answer to each question (regardless of

how many times it happened) signified violence. This scale has been previously used within an Iranian population with a reported Cronbach alpha score of 0.92 (6). In the present study, a good Cronbach's alpha co-efficient was achieved on all subscales (0.86 for physical, 0.89 for sexual, 0.79 for psychological and 0.91 for injury) .

*Revised version of the Fear of Vaginal Delivery questionnaire (rFDQ)*: this instrument includes 11 items relating to fear of vaginal birth with dichotomous answers of "yes" or "no". Six or more positive answers is deemed to be severe fear of childbirth(26). Validity and reliability of the Farsi version of this instrument derived a Cronbach alpha of 0.81 (27). In this study the Cronbach alpha was .87.

*Spielberger's State-Trait Anxiety Inventory (STAI)*: this scale examines emotional states and personality traits and consists of two subscales namely state anxiety and trait anxiety comprising 40 items overall. Each item has four response options with scores ranging from 0-3 indicating women are 'not anxious' to 'high anxious'. A possible total score range for every part, trait and state anxiety, was 0-60. Mahram assessed validity and reliability and approved the Farsi version of this scale (28). The Cronbach alpha in the present study is .91.

### *Procedures*

Women were advised the aim of the research was to identify psycho-social factors that may impact how they felt about their upcoming birth and that their participation was voluntary. Women could decline without any change to how they would receive their care. Following description of the study women were provided written information. Those agreeing to participate were asked to sign a consent form and were then provided the questionnaire. To meet the participants' privacy, we provided a small discrete room at the health centres for women to complete the questionnaires.

One hundred and fifty participants completed questionnaires at the health centers with the remaining women choosing to take the surveys home and return them completed during their next visit. This group of women were asked to complete questionnaires in the absence of their husband. Twenty women did not return on the date set for their second visit and attempts to contact them via telephone were not successful. Four other

participants were rejected due to the amount of missing data in returned questionnaires. Therefore, the analysis was conducted on 176 participants.

## **Data Analysis**

Descriptive statistics was conducted for socio-demographic and obstetric data. Frequencies for IPV and fear of birth were also undertaken. Mann-Whitney u, Pearson's chi-square, Fisher's Exact tests were applied to evaluate the relationship between variables for socio-demographic, and obstetric characteristics, sub-scale scores of IPV and also fear of birth based on parity. Adjusted multiple logistic regression analysis provided estimate odds ratios (OR) and 95 percent confidence intervals (CIs). Firstly, we performed multiple logistic regression for the nulliparous and multiparous groups independently, and then for all participants after adjusting for potential confounding variables. Age and state-trait anxiety were considered as confounders in both nulliparous and multiparous women. In addition, in the multiparous women, the number of previous births and experience of previous birth (positive or negative) were added in the analysis. To achieve the final models the Bayesian inference criterion (BIC) was used. Stata IC (version 14) was employed to perform statistical analysis.

## **Ethics**

This project was approved by the Research Council of Medical Sciences University of Mashhad.

## **Results**

### *Demographic and Obstetric Characteristics of participants*

Around 210 women were invited to the study, 200 women accepted and 174 surveys were completed giving a response rate of 82.85%. The mean age of participants was 26.67 years (range 18-40, SD  $\pm 4.59$ ). Almost 89.1% (n=155) of participants identified as home-makers. The majority of women (83.3%; n=145) had a high school diploma or university degree indicating that overall, participants were well-educated. The mean age of husbands' was 31.91 years (range 29-45, SD  $\pm 4.80$ ) with a large proportion

self-employed (62.2%,n=110), and only 1.1% (n=2) unemployed. The majority of women, 63.4% (n=102) were in the second trimester of pregnancy and just over half were in their first pregnancy. Comparing these socio-demographic variables between groups with and without IPV showed no significant difference. Detailed information about demographic and pregnancy characteristics are illustrated in Table 1.

#### *Rates of Fear of Birth*

Overall, 61.5% (n=107) of pregnant women reported fear of childbirth. When comparing women by parity, higher numbers of nulliparous compared to multiparous women (65.7% ,n= 69 versus 55.1%, n=38) reported a fear of childbirth. This difference was not statistically significant. Whereas there was a significantly greater incidence of childbirth fear levels in multiparous with just one birth compared to more than one (62.5% vs 23.1; p= 0.01). In addition, Spearman's rho correlation test revealed an inverse and significant association between the number of previous births and having fear of birth when analysed by all participants ( R=-.181 P= .017). Moreover, amongst demographic characteristics only age showed a significant relationship with fear of child birth (Table1). Analysing the *rFDQ* by items showed that the two most important reasons for women's fear were due to being worried about the baby's health (87.4%) and being seized with panic at the delivery (81.7%), (table 3).

#### *Rates of IPV*

Findings of this study showed that a total of 73% (n=127) of women had experienced IPV at least once during pregnancy. The highest percentage was obtained for psychological IPV (66.1% n=115) followed by sexual (30.5% n=53) and physical (23% n=40) (Table 2). Furthermore, 32.8% of women reported one type of IPV compared to 21.3% of women who were exposed to two types, 10.9% exposed to three types and 18.9% of women experiencing all three types of IPV.

#### *Association Between IPV and Fear of Childbirth:*

In addition to univariate analyses of the association between fear of birth and IPV, we performed Adjusted logistic Regression analysis in nulliparous, multiparous, and total

participants, separately. According to this, our findings revealed that in the nulliparous experiencing physical IPV significantly predicts fear of birth (adjusted OR=12.15; 95%CI, 1.33, 110.96) while in multiparous, psychological IPV is significantly related to a reduction of fear of birth (adjusted OR=.184; 95% CI, .04, .73). In total (nulliparous and multiparous together) of participants, physical IPV showed a significant relationship with fear of birth for the entire cohort of participants after adjusting for confounding variables (adjusted OR=2.47; 95%CI, 1.01,6.02).(Table 4).

## **Discussion**

This population-based study was consistent with findings of other studies conducted in Iran indicating that IPV is common in women presenting for obstetric or gynecologic care(29-31). Hassan et al(31) reported the same overall prevalence of IPV (72.8%) in pregnant women living in the Iranian cities of Miandoab and Mahabad in the province of West Azerbaijan to our population living in north-eastern Iran. When only physical violence is assessed, our study (23%) was within the broad rates of 9% to 60% reported previously(32-34). In our study psychological IPV impacted two thirds of the population and sexual violence also featured for one third of women. While emotional and physical IPV differed slightly across work conducted in Iran (possibly due to variation in measures used) our findings were consistent with previous studies showing sexual violence occurs for one third of Iranian women(35). Based on our findings it seems that Iranian pregnant women are substantially more likely to experience IPV during pregnancy in comparison to some other populations. For instance in a study conducted with South African women, overall IPV during pregnancy has been reported for around one-fifth of women in which the proportion of psychological IPV was close to 17% and sexual IPV was 3% (36). Similar to South Africa, other countries have also reported to having lower levels of IPV than found in our study of Iranian women. The total percentage of IPV during pregnancy was 10.6% in Belgium (37), 23% in Pakistan (38), 28.4% in North India (39) and 31.4% in Japan (40). All these studies employed instruments measuring IPV but contained few details and questions. In other surveys in which either the Center for Disease Control guidelines for assessing violence or CTS2 were utilized to assess IPV, the rate or

frequency has been noticeably high. In this regard, a study conducted by Golchin et al (41) in Iran reported, the overall incidence of IPV to be 66.45%. Also, Meheng(42) showed a proportion of 18% for physical violence and 20% for sexual violence. Interestingly, in a survey with rural Appalachian pregnant women, 80.8% had experienced any type of IPV (43). All these studies used CTS2 to measure IPV comprising multiple items that investigated different types of IPV, but most particularly the incidence of psychological IPV for the duration of the pregnancy. As a result, the probability of detecting IPV would dramatically increase and estimations would be more realistic. In addition to this methodological disparity, Iran as a middle-income country, faces some cultural issues in respect of men's attitude towards female gender, and of women's attitudes towards their capabilities and expectations of marital life (44). There is a high level of tolerance for violence, which is considered a leading contributor to high levels of IPV including during pregnancy (34).

While links between women's demographics and birth fear have varied across international studies, women in our study who were younger or had given birth to only one baby previously, were more likely to be fearful of birth. In this study, 72% of women experienced fear which is higher than that found previously in Iran(21) and markedly different to that of Canada with 25% (45), Australia with 24% (46), Norway with 16%(47) and Denmark with 8.7% (48). After analyzing questions one by one, we noticed the vast majority of participants (87%) confirmed their concern in response to the question of fetal-neonatal health. In fact, worrying about fetal-neonatal health accounted for the intensity of women's high level of fear. These results are in line with Matinnia et al, and Geissbuehler and Eberhard studies(49, 50). The former included 342 Iranian pregnant women in which, severe fear was expressed by 48.2% of participants, with 93.9% indicating the second most frequent factor for childbirth fear was "health for life of the baby". The latter study conducted with 8000 Swiss pregnant women, also indicated childbirth fear in 62.8% of pregnant women, with 49.6% identifying "fear for the child's health", as a dominant factor for their fear. Moreover, in the current study we focused on fear related to vaginal birth and as several studies have illustrated fear of the process of labor and childbirth is the most important source

of fear during pregnancy(49, 51). Regarding differences for fear of childbirth based on parity, we found a non-significant 10% higher incidence in nulliparous women to that of multiparous women, however correlation test revealed a negative and significant relationship between these two variables, and is consistent with a number of previous studies (38, 50, 52). Nonetheless, some others did not confirm this result (53, 54).

Concerning the current survey, we identify for the first time that being exposed to physical IPV during pregnancy irrespective of parity increases the chance of women fearing birth. Varied and challenging results have been reported in this field despite no previous direct study of both IPV and birth fear. Heimstad et al(54) reported a link between sexual and/ or physical abuse in childhood and fear of childbirth. Eberhard-Gran et al (47) found that women with a history of sexual abuse in adult life have a fivefold increased risk for extreme fear during labor compared to non-abused women. Moreover, in Schroll's study(48), sexual lifetime violence negatively influenced fear of childbirth after delivery, but had no impact on fear during pregnancy or during birth. We could not find any relationship in our population between sexual violence during pregnancy and fear of childbirth. In the present study, despite the prevalence of physical IPV being lower than psychological and sexual IPV, physical IPV showed an increased likelihood of fear of childbirth. The relevance of this may be attributed to , fetal-neonatal health being the most prominent cause of women's fear and also is a possible direct and detrimental effect of physical IPV on the unborn baby (55-57). Therefore, this relationship between physical IPV and fear of birth would be justifiable. It is worthy to be mentioned that we observed a relatively wide confidence interval in the adjusted OR for Physical IPV in nulliparous group that we believe is due to the small sample size in this group.

In multiparous, our results interestingly showed that psychological IPV might decrease the chance of experiencing fear of birth. It could be that women experiencing psychological violence are more likely to have low self-esteem and sense of control resulting in lack of sufficient capability to perform well during labor. They are highly likely to request a caesarean section but not because of fear, but due to an underlying lack of self efficacy and believe that someone else (the doctor), will manage the birth.

## **Strengths and Limitations**

Some limitations can be acknowledged from this survey. Firstly our small sample size did not allow us to categorize fear of childbirth and also IPV according to the severity in contrast to many others that have reported them categorically. Secondly, despite Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) which has been suggested as a standard instrument to assess fear of childbirth with 33 items(58), we used Fear of vaginal delivery scale (FDQ) due to the lack of availability of a Farsi version of W-DEQ at the point of the study. However, we can mention some strong points for this present study. First of all, risk of underestimation of IPV is very low due to employing CTS2 for identifying IPV. Second, we gathered data from both nulliparous and multiparous women in contrast to many others, and also analyzed data separately according to parity (including differences between multiparous having one previous birth or more), in order to obtain exact differences between nulliparous and multiparous pregnant women. Third, we assessed IPV and fear of childbirth during the woman's current pregnancy, hence results are based on current actual experiences minimizing the likelihood of recall bias. Lastly, given that fear of birth and IPV are global issues and observed across different cultures to have variable levels of prevalence and severity, our results can be generalized to other populations.

## **Clinical Implication**

For the future and given the sensitivity of detecting and monitoring IPV and fear of birth, women could be offered midwifery continuity. This would provide timely identification and support, particularly as midwifery care improves birth outcomes, women's satisfaction(59) and decreases fear levels(60) . By also including IPV and fear of birth in routine perinatal data collection may provide a focus to addressing psychosocial factors that impact maternal morbidity and mortality and assist identification of best mechanisms for universal screening and intervention.

## **Conclusion:**

This study indicates a high level of IPV and fear of childbirth during pregnancy for Iranian women. Exposure to physical IPV during pregnancy is a predictor to having fear of vaginal birth, and is especially pertinent to nulliparous women. These findings

emphasize the need for modifying screening programs for IPV across the duration of pregnancy. In Iran, this strategy is currently conducted only in the first prenatal visit and is not repeated throughout pregnancy as the focus is on IPV before pregnancy. However, according to contemporary evidence a significant number of women may experience IPV for the first time during pregnancy. Therefore, it is highly likely that battered women within pregnancy are not being identified. It is therefore essential to plan effective interventions primarily based on relationship based care such as that provided in continuity of midwifery care models. Where women build a trusting relationship with their own midwife or small group of midwives they are more likely to share personal circumstances and the midwife better placed to observe the family and put strategies in place to decrease the rate and severity of IPV. Additionally family therapy could be initiated.

The present study is the first to find that fear of childbirth may be a psychological consequence of exposure to IPV in pregnancy and as a result; more investigations are needed to prove our findings. In addition, given that some studies have highlighted the role of anxiety sensitivity in the perception of labor pain as a reason for fear of childbirth, paying attention to this variable in addition to state-trait anxiety is suggested in future research.

**Conflict of interest:** The authors report no conflicts of interest.

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Table1: Participants' socio-demographic and obstetric data according to IPV<sup>1</sup> and fear of childbirth.

Characteristics	n	Total IPV		p-value	Fear of childbirth		p-value
		n (%)			n (%)		
<b>Age</b>		YES	NO	.51	YES	NO	.003
18-25	86	70(81.4)	16(18.6)		63(73.3)	23(26.7)	
26-33	76	49(64.5)	27(35.5)		36(47.4)	40(52.6)	
34-40	12	8(66.7)	4(33.3)		8(66.7)	4(33.3)	
<b>Education</b>				.39			.30
Elementary and middle school	29	20(69.0)	9(31.0)		21(72.4)	8(27.6)	
High school	89	70(77.8)	20(22.2)		55(61.8)	34(38.2)	
University degree	56	33(67.9)	18(32.1)		31(55.4)	25(44.6)	
<b>Occupation</b>				.39			.51
Housewife	155	112(72.3)	43(27.7)		94(60.6)	61(39.4)	
Employee	19	15(78.9)	4(21.1)		13(68.4)	6(31.6)	
<b>Family income</b>				.66			.19
Enough	141	105(74.5)	36(25.5)		86(61.9)	53(38.1)	
Less than enough	24	16(66.7)	8(33.3)		16(66.7)	8(33.3)	
More than enough	9	6(66.7)	3(33.3)		3(33.3)	6(66.7)	
<b>Gestational age</b>				.14			.61
Second trimester	102	79(77.5)	23(22.5)		63(61.8)	39(38.2)	
Third trimester	59	39(66.1)	20(33.9)		39(66.1)	20(33.9)	
<b>Parity</b>				0.72			0.15
Nulliparous	105	78(74.3)	27(25.7)		69(65.7)	36(34.3)	
Multiparous	69	49 (71.0)	20(29.0)	1.0 <sup>F</sup>	38 (55.1)	31 (44.9)	.01
1	56	20 (29.0)	16(28.6)		35(62.5)	21(37.5)	
≥2	13	9(69.2)	4(30.8)		3(23.1)	10(76.9)	
<b>Pregnancy status</b>				.28			.65 <sup>F</sup>
Wanted	139	98(70.5)	41(29.5)		87(62.6)	52(37.4)	
Unwanted	28	4(14.3)	24(85.7)		15(53.6)	13(46.4)	
Unwanted but welcome	7	5(71.4)	2(28.6)		5(71.4)	2(28.6)	
<b>Experience of last birth</b>				.02			.33
Positive	33	19(57.6)	14(42.4)		21(63.6)	12(36.4)	
Negative	35	29(82.9)	6(17.1)		18(51.4)	17(48.6)	

F: Fisher's Exact Test

1. Intimate partner violence

Table2: Frequency of types of IPV<sup>1</sup>, fear of childbirth and other psychological variables in nulliparous versus multiparous women.(N=174)

<b>Variables</b>		<b>Nulliparous (n=105) n (%)</b>	<b>Multiparous (n=69) n (%)</b>	<b>p-Value</b>
<b>Physical IPV</b>	yes	25 (23.8)	15 (21.7)	0.85
	No	80 (76.2)	54 (78.3)	
<b>Psychological IPV</b>	yes	70 (66.7)	45 (65.2)	0.87
	No	35 (33.3)	24 (34.8)	
<b>Sexual IPV</b>	yes	31 (29.5)	22 (31.9)	0.86
	No	74 (70.5)	47 (68.1)	
<b>Total IPV</b>	Yes	78 (74.3)	49 (71.0)	0.72
	No	27 (25.7)	20 (29.0)	
<b>Fear of childbirth</b>	yes	69 (65.7)	38 (55.1)	0.15
	No	36 (34.3)	31 (44.9)	
<b>State anxiety</b>	mean (SD)	45.23±6.81	41.97±9.26	0.02
<b>Trait anxiety</b>	mean (SD)	44.33±8.2	43.02±9.01	0.04

1. Intimate partner violence

Table 3: Frequency of Fear of Vaginal Delivery questionnaire by items.

Items	Yes n (%)	No n (%)
Do you have difficulties relaxing because you are thinking of the delivery?	90(51.4)	85(48.6)
Are you afraid of being seized with panic at the delivery?	143(81.7)	32(18.3)
Are you afraid that the nurses won't take care of you during the delivery?	100(57.1)	75(42.9)
Have you always been afraid of giving birth?	112(64.4)	62(35.6)
Are you afraid that the baby will not be healthy?	153(87.4)	22(12.6)
Have you had nightmares about the delivery?	29(16.6)	146(83.4)
Are you afraid of rupturing during the delivery?	79(45.1)	96(54.9)
Are you afraid of painful injections during the delivery?	100(57.1)	75(42.9)
Are you afraid of losing control of yourself at the delivery?	114(65.1)	61(34.9)
Do you prefer Caesarean section to an ordinary delivery?	73(41.7)	102(58.3)
Are you afraid of death when thinking of the delivery?	72(41.1)	103(58.9)

Table4: Assessment of association between fear of birth and IPV<sup>1</sup> in nulliparous, multiparous, and total participants, separately, by univariate and multivariate logistic regression.

Variables	Nulliparous		Multiparous		Total	
	Crude results (univariate)	Adjusted results (Multivariate)	Crude results (univariate)	Adjusted results (Multivariate)	Crude results (univariate)	Adjusted results (Multivariate)
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Sexual IPV	1.13 (.46,2.77)	.69 (.21,2.20)	.43(.15, 1.20)	.72(21, .48)	.74(.38, 1.43)	.726(.350, 1.506)
Psychological IPV	2.10 (.90,4.89)	1.81(.63,5.19)	.19(.06, .60)	.18(.04,.73)	1.20(.62, 2.31)	.727(.352, 1.501)
Physical IPV	8.50 (1.87, .53)	12.1(1.33,111.0)	.64(.20, 2.04)	1.55(.37,6.41)	.45(.20, .99)	2.47(1.01,6.02)
Age	1.14 (1.02,1.28)	1.13 (.99, 1.28)	.94(.85,1.04)	.92(.81, 1.04)	1.05(.98,1.12)	1.05(.98, 1.13)
Stat Anxiety	1.08 (1.01,1.15)	1.21 (1.08, 1.36)	.99(.94,1.05)	.98(.91, 1.06)	1.03(.99,1.08)	1.06(1.00, 1.12)
Trait Anxiety	.98 (.94,1.03)	.88 (.81, .97)	.99(.93,1.05)	1.02(.94,1.10)	.99(.95,1.02)	.88(.81, .97)
Number of previous delivery	-----	-----	2.28(.75,6.92)	4.08(.92,18.1)	-----	-----
Experience of last delivery	-----	-----	.85(.51,1.39)	.94(.52, 1.71)	-----	-----

1. Intimate partner violence