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Original Article

Domestic violence among infertile women: a study in north of Iran

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Abstract. Infertility is associated with emotional problems, marital distress and domestic violence (DV). It might have a substantial consequence on women, families, and society as a whole. This study was conducted to determine the prevalence of domestic violence and its related risk factors among infertile women in the north of Iran. A total of 379 infertile women between October 2015 and March 2016 were included in the current study, using consecutive sampling. Socio-demographic characteristics were assessed via a structured questionnaire. The Revised Conflict Tactics Scale (CTS2) was used to evaluate domestic violence. The data were statistically analyzed and a P <0.05 was considered as the significance level for all tests. Of 379 infertile women, 88.9% reported domestic violence. Psychological violence was the most common type of violence. There were no significant relationships found between violence and women's educational status, men's jobs, place of residence, alcohol consumption, and drug addiction. Men smoking and women with younger age were risk factors of violence against women (P <0.05). The prevalence of domestic violence is considerably high in Sari, Iran. Being a smoker and having a younger age may increase violence against infertile women. Health staff should identify at-risk women and support them and their husbands via educational programs and counseling.

Keywords: Domestic violence, infertility, women, prevalence, risk factors

Introduction

Epilepsy Infertility is defined as the failure of clinical pregnancy after one year or more of regular unprotected sexual intercourse [1]. It may be primary or secondary, the former refers to the inability to bear any children, whereas in secondary infertility couples are unable to have an additional live birth [2]. The rate of infertility in one year is approximately 3.5% to 16.7% for couple worldwide[3] however, infertility rate varies among different countries. In Iran, the overall prevalence of lifetime primary infertility was reported from 17.3% to 20.2% [4, 5]. Although the WHO has recognized that infertility equally affects men and women [6], it is commonly considered a female disorder and women generally bear the burden of couple's infertility [7].

The disorder is associated with emotional and financial problems, economic deprivation, social stigma, marital distress, divorce and domestic violence [8, 9]. Violence is a public health issue, which affects the lives of millions of women all over the world regardless of ethnicity, culture, religion, socioeconomic status and educational levels [9]. The United Nation adopted the Declaration on the elimination of violence against women, which defines violence against women as "any act of gender-based violence that results or likely to result in physical, sexual or psychological harm or suffering to women including threats of such harm, coercion or arbitrary deprivation of liberty whether occurring in public or private life" [10]. Domestic violence (DV) might have substantial consequences and threatens not only the physical and emotional health of women, but also affects families and society as a whole. The WHO estimates that almost one-third of women who have intimate partners have experienced physical and/or sexual violence [10]. Furthermore, it has been found that infertility increases the risk of DV compared to women who have children [11].

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Prevalence of DV among infertile women varies widely based on socioeconomic status, geographical location, and cultural and religious differences. For example, the prevalence of DV among some countries are as follows: 31.6% in Turkey [9], 64 % in Pakistan [12] and 77.8% in India [13]. In Iran, researchers cite various percentages varying from 14% to 61.8 % [8, 15, 16]. Results of some research studies indicate that women who are victims of violence are more likely to have depression, anxiety, reduced self-esteem, stress disorder, attempted suicide, injuries, sexual and physical health problems [9, 10].

Although there is a wide range of research about domestic violence, there was a lack of evidence regarding the violence against infertile women. Therefore, considering the importance of the issue and its adverse effects among this vulnerable group, the current study was performed to determine the prevalence of DV and its related risk factors among infertile women seeking fertility treatment at the only infertility clinic of the teaching hospital affiliated with Mazandaran University of Medical Sciences in Sari, north Iran.

Materials and Methods

The current cross-sectional study was carried out among infertile women who were referred to the only infertility clinic of the teaching hospital affiliated with Mazandaran University of Medical Sciences, located in the North of Iran between October 2015 and March 2016. The formula for calculating the required sample size by considering type 1 error 0.05 and prevalence of domestic violence to be 60 %8 revealed that 375 subjects were needed:

$$N=\frac{z^2(1-\propto/2)pq}{d^2}=\frac{4*o.4*0.6}{0.05^2}=375$$

Women who consecutively reported to the infertility clinic and who consented to be a part of the study were included. The eligibility criteria included: recognition of infertility by obstetricians, minimum one year of recognition, married for more than one year, and a lack of physical and mental diseases. Participants were excluded in the event of pregnancy or unwillingness to continue participating in the study. Sociodemographic characteristics including age, duration of infertility and marriage, residential place, the level of education, employment status, smoking, drug addiction, and alcohol consumption were recorded via a structured questionnaire.

Domestic violence was also measured during the last twelve months using the Revised Conflict Tactics Scale (CTS2) [17], which consists of 39 questions. The CTS2 covers five aspects of spousal conflict including physical violence with 12 items (e.g. my partner grabbed me); sexual violence with 4 items (e.g. my partner made me have sex without a condom); negotiation with 6 items (e.g. my partner explained his side of a disagreement to me); psychological violence with 8 items (e.g. my partner shouted or yelled at me); and physical injury with 6 items (e.g. had a sprain, bruise, or small cut because of a fight with my partner). The questionnaire has been revised and modified by Behboodi Moghadam et al. [14]. Due to social and cultural differences, researchers disregarded the following three questions concerning sexual acts: He insisted that I engage in oral or anal sex (but did not use physical force); He used force (such as hitting me, holding me down, or using a weapon) to make me engage in oral or anal sex; He used threats to make me engage in oral or anal sex [8]. References confirmed the reliability and validity of the scale for the Iranian population. The affirmative answer to any of these questions was deemed as violence.

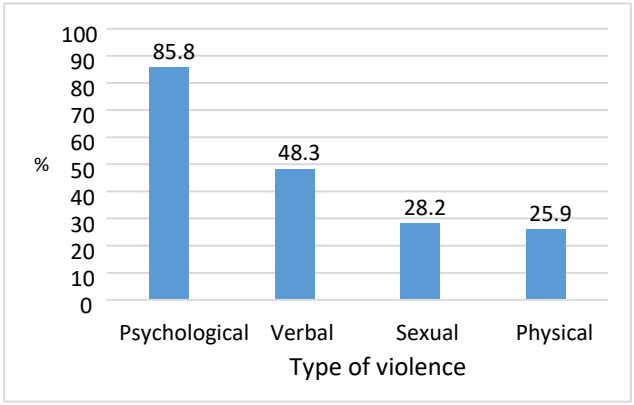

Figure 1 Prevalence of domestic violence in infertile women (n=379).

A trained Midwifery Master's student completed the questionnaires utilizing private, face-to-face interviews in the absence of their husbands or family members. The Ethics Committee of the Mazandaran University of Medical Sciences approved the study. Written informed consent was obtained from all subjects prior to their participation in the study. In the event that the participants were illiterate, the interviewer read the informed consent aloud and they used their fingerprint instead of their signature. For confidentiality reasons, the respondents' names were not recorded on the questionnaire and they could withdraw from the study without any consequence at any time.

Statistical analysis

The data were analyzed using the SPSS-16 software. A *t*-test and chi-square were used to evaluate the association between DV and other variables for continuous and categorical variables respectively. Multivariate logistic regression was also utilized to determine odds ratios (±95%CI) for independent risk factors of DV. P <0.05 was considered as the significance level for all tests.

Results

A total of 379 infertile women with a mean (SD) age of 31.66 ± 6.46 years participated in this study. The mean age (SD) of their spouse was 35.99 ± 8.40) years. A 88.9 % of the participants reported having experienced domestic violence. At 85.8%, psychological violence was the most frequently reported form of violence against women. The frequency of various forms of violence is depicted in Figure 1. Table 1 demonstrates the prevalence of domestic violence based on the characteristics of infertile women and their husbands. There was no significant relationship

TABLE 1
SOCIODEMOGRAPHIC VARIABLES FOR WOMEN WITH AND WITHOUT DOMESTIC VIOLENCE AND THEIR PARTNERS (n = 379)

Variables	Total (%)	Domestic violence		P-value
		Yes	No	
Women age (y), mean (SD)	31.66 ± 6.46	31.08 ± 6.22	36.29 ± 6.54	< 0.001*
Men age (y), mean (SD)	35.99 ± 8.40	35.22 ± 7.70	42.12 ± 11.02	< 0.001*
Marriage duration (y), mean (SD)	7.08 ± 4.82	6.91 ± 4.64	8.43 ± 6.1)	0.05*
Infertility duration (y), mean (SD)	5.56 ± 4.40	5.38 ± 4.13	7.05 ± 6.0	0.02*
Women educational status				
Illiterate	21 (5.5)	20 (6)	1 (2.4)	0.19**
< Diploma	100 (26.4)	85 (25.2)	15 (35.7)	
Diploma	153 (40.4)	134 (39.8)	19 (45.2)	
Academic degree	105 (27.7)	98 (29)	7 (16.7)	
Men educational status				
Illiterate	26 (6.9)	26 (7.7)	0	0.02**
< Diploma	114 (30.1)	94 (27.9)	20 (47.6)	
Diploma	146 (38.5)	135 (40)	11 (26.2)	
Academic degree	93 (24.5)	82 (24.3)	11 (26.2)	
Women occupation				
Housewife	317 (83)	277(82.2)	40(95.2)	0.03**
Employed	62 (16.4)	60(17.8)	2 (4.8)	
Men occupation				
Eemployed	372(98.2)	331(98.2)	41(97.6)	0.78**
Unemployed	7(1.8)	6(1.8)	1(2.4)	
Residential place				
Urban	254 (67)	225(66.8)	29(69)	0.76**
Rural	125 (33)	112(33.2)	13(31)	
Men Smoking				
No	281 (74.1)	241(71.5)	40 (95.2)	0.005**
Yes	98 (25.9)	96 (28.5)	2 (4.8)	
Men alcohol use				
No	375 (98.9)	333 (98.9)	42 (100)	0.47**
Yes	4 (1.1%)	4 (1.1)	0 (0)	
Men addiction to drug				
No	332 (87.6)	292 (86.7)	40 (95.2)	0.11**
Yes	47 (12.4)	45 (13.3)	2 (4.8)	

*Using *t*-test; **Using the $\chi 2$ test.

between violence and the women's educational statuses, the men's occupations, place of residence, the men's alcohol consumption and drug addictions. However, other variables revealed a significant relationship with violence ($P < 0.05$).

The results of the multivariate logistic regression revealed that as the age of the women increased, the odds of DV decreased. Each year increment in age decreased the odds of DV by 9% (OR: 0.91, CI: 0.85-0.99, P = 0.03). Additionally, smoking cigarettes by men was a significant risk factor of domestic violence against women (OR: 8.12, CI: 1.87-35.21, P = 0.005). Men's age, length of marriage, infertility duration and women's occupation were not risk factors for domestic violence, as shown in the univariate analysis in Table 2.

TABLE 2
ASSOCIATION BETWEEN DOMESTIC VIOLENCE AGAINST WOMEN AND OTHER VARIABLES USING LOGISTIC REGRESSION ANALYSIS (n = 379)

Variables	Crude odds ratio (95% CI)*	P-value	Adjusted odds ratio (95% CI) **	P-value
Women age (y)	0.88 (0.84-0.93)	0.001	0.91 (0.85-0.99)	0.03
Men age (y)	0.92 (0.89- 0.95)	0.001	0.95 (0.91-1.01)	0.16
Marriage duration (y)	0.94 (0.89-1)	0.05	1.09 (0.96-1.23)	0.16
Infertility duration (y)	0.93 (0.87-0.99)	0.02	0.90 (0.79-1.03)	0.15
Women occupation				
Housewife	0.23 (0.05-0.98)	0.04	0.26 (0.06-1.15)	0.07
Employed	Reference			
Men Smoking				
No	Reference			0.005
Yes	7.96 (1.88-33.61)	0.005	8.12 (1.87-35.21)	

OR: odds ratio; CI: confidence interval. *for all demographic characteristics, **Adjusted for women age, men age, marriage and infertility duration, women job and men smoking.

Discussion

Our study found a high prevalence of DV among infertile women at a rate of 88.9%. An explanation for the high rate of violence in our study may be due to the inclusion of emotional violence and it was also conducted in the public fertility clinic, which provides services to people mainly coming from lower educational and socioeconomic status, while other studies in Iran, Turkey, Pakistan, India and Nigeria found it to be between 31-76% among infertile women [8, 9, 12, 15, 16, 18, 19]. The result of a study conducted in India reported that 76.3% of the infertile women interviewed had experienced violence [13]. However, none of the studies reported rates of DV as high as our study. This difference may stem from methodological complexities, using different questionnaires, and sociocultural variations among women in these countries.

In our study, psychological violence, at 85.8%, was the most common type of violence followed by verbal violence that was seen in almost half of the women. Sexual violence occurred less frequently and physical violence was reported in one-quarter of women who experienced violence. Although the prevalence of overall violence is considerably high, no one reported experiencing physical injury. It is worth noting that different types of violence are connected to each other. For instance, sexual violence may lead to physical and verbal violence simultaneously and these can cause psychological violence.

Similar to our findings, numerous studies reported psychological violence as the most common form of violence [8, 15, 16, 18, 20, 21]. Comparable to our result, psychological violence rates against women were found in previous studies to be 87.3%, 82% and 74.3% in Iran [16, 20, 22]. A higher prevalence was reported in Nigeria at 94% among infertile women, which is slightly greater than the findings of this study [18]. In contrast, Yildizhan et al. found verbal abuse to be the most common type of violence with rates of 63.4 %; however, they did not include psychological violence in their study [9]. Verbal violence was found to be the second most common type of violence in our study. A similar result was obtained in Nigeria, where the prevalence of verbal abuse was

recorded at 39.2% [21]. In the current study, sexual violence was behind verbal abuse in terms of prevalence violence was behind verbal abuse in terms of prevalence followed by physical violence, which is in line with the finding of Abadi et al. showing a 51.4% prevalence of sexual violence [20]. A higher prevalence of sexual violence at 82.9% was found in Nigeria [18]. This study had no reports of physical injury, which is in contrast to Ardebily et al. where 6 % of the respondents reported injury [8]. According to our knowledge, the number of studies that report physical injury among infertile women was quite low. This discrepancy might be due to different understandings of violence, reporting issues, and variations in research design in the different studies.

The results of this study found that no significant relationship exists between DV and women's educational status, men's employment status, place of residence, drinking alcohol and drug addiction by men. Although education might be a protective factor, the lack of a significant relationship between age, women's education, men's occupation, place of residence and violence against infertile women indicates that DV is a global problem and widespread regardless of economic development and educational level.

Moreover, associations between violence and sociodemographic characteristics are controversial due to differences among various studies or even same country. For instance, in some studies, there was no association between violence and women's educational and employment status [8, 12, 19] while, the result of a study conducted in Nigeria found a significant relation between violence and education and occupation [18].

In a similar study, Ardabily and colleagues reported a significant relationship between violence and an unemployed spouse.[8] In the present study, domestic violence was associated with women's employment status, infertility duration, length of marriage, women and men age, men smoking, and men's educational status. In contrast, Akyüz et al. found no correlation between violence with age and occupational status of the women [19]. Similarly, some studies reported no significant association between age and violence among infertile women.[9]

Regarding the place of residence, some studies reported being a resident in rural areas increases the risk of DV [20, 23], whereas, in line with our finding, few studies reported no association between violence and residential place [24, 25]. However, a study reported living in urban areas was related to higher rate of violence [26]. This discrepancy might be due to the number of differences between rural and urban areas in various societies. Supporting our finding, Akyuz et al. demonstrated significant relationships between domestic violence and infertility duration [27], which contradicts other studies conducted in Iran and Nigeria [8, 21].

Despite the lack of association between violence and addiction in our study, in a similar study addiction problems of a spouse were seen in more than half of the women who experienced violence [20].

Of all included variables, only smoking by men and women with younger ages were risk factors of violence. The result of our study showed that smoking increases the chance of violence eightfold. Similar to findings of the present study, some studies reported smoking as a risk factor of DV [28, 29]. In contrast to this study, some studies found higher rates of violence among women with the lower level of education and housewives [18, 20]. The difference in the current study might be due to the cultural and economic factors that may neutralize the effect of other possible factors. Unlike the result of our study, some studies found alcohol consumption as a factor increasing the likelihood of violence [26, 30]. A plausible explanation is the low levels of alcoholism in two groups of the current study.

Limitation

There are some limitations to our study. Due to cultural reasons, we removed three questions of the CTS2 questionnaire. The participants were recruited only at the infertility clinic of the teaching hospital at Mazandaran University of Medical Sciences, therefore, the result of our study is not generalizable to the general population of infertile women. Furthermore, the study was based on self-reported data of the female participants. Due to the sensitivity of the topic, it should be interpreted with caution as an underestimation or overestimation of the true rate of the problem might exist. Despite these limitations, it is important to mention that the quite large sample size has provided valuable data as risk factors of domestic violence. Although several studies have investigated DV against women as a general population, the number of studies that focus on infertile women is not adequate and shows the necessity of conducting more research studies among this vulnerable group of women. Furthermore, according to our knowledge, most of the similar studies in Iran focused on emotional, physical, and sexual violence, while the current study also includes verbal and physical injury of DV.

Conclusion

The result of our study demonstrated a high prevalence of DV among infertile women. Psychological violence was found to be the most common type of violence, revealing that women mainly suffer from emotional problems. Male smoking habits and younger females were risk factors of domestic violence. It is necessary that health staff identify at-risk women and provide special attention to them and their husbands via educational programs such as communication skill, problem-solving, and coping strategies. Due to the use of different instruments and methodological approaches in previous studies, there are inconsistencies in the reported violence rate. Therefore, further studies will be performed among infertile and fertile women with the same instrument to compare the rate of violence among them. It should also include the private fertility clinic as well. Violence against women may lead to depression, stress, anxiety disorders, injury or even suicide [10]. Due to the importance of women's role in society, domestic violence against infertile women should not be neglected. Unfortunately, cultural barriers in developing countries make interventions very difficult, hence raising awareness

and training of spouses regarding mutual rights and anger management via counseling centers and social media is highly suggested.

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Conflict of Interest

The authors declare no conflicts of interest.

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