Violence and Its Related Factors in Infertile Women Attending Infertility Centers: A Cross-Sectional Study

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ARTICLE INFO	ABSTRACT
	Background & aim: Infertility, as a crisis in marital life, has multiple psychological and social consequences for couples, especially women. Infertile women are more vulnerable to violence than fertile women. The purpose of this study was to examine violence and its related factors in infertile women referring to infertility centers of Rasht, Iran. ***Methods:*** This cross-sectional study was conducted on 245 women with primary infertility who referred to infertility center in Rasht, Iran in 2017, using sequential sampling method. The data collection tool was a self-structured questionnaire to examine the demographic characteristics of the couples and Onat's violence standard questionnaire for assessing the exposure of infertile women to violence. The data were analyzed using Kolmogorov-Smirnov, Friedman, Mann-Whitney and Kruskal-Wallis tests as well as Spearman correlation and logistic regression. ***Results:*** The results showed that the mean total score of violence was 50.93 ± 18.76. Also, there were significant relationships between the total score of violence and the variables of the duration of marriage, the duration of awareness and treatment of infertility, the age of married couples, occupation/education of the couples, the family relationship between couples, unwillingly marriage and the number of infertility treatment attempts ($P<0.05$). ***Conclusion:*** Infertility is not merely a biomedical disorder and can lead to violence against women, therefore providing counselling services to infertile couples, making them aware of infertility treatments, improving the socio –economic status of women as well as teaching the way of managing marital, cultural and family issues to couples can be effective in reducing violence against infertile women.

Introduction

Failure to achieve a successful pregnancy after a year of regular and unprotected sex is defined as infertility (1). Although male and female causes of infertility are roughly at the same proportion (2), women are often thought to be responsible for couples' infertility (3). Even in male infertility, women are more likely to face family and social problems and endure the main burden of infertility (4). Therefore, women are more likely experience psychological and social stressors due to infertility and its treatment (5-7). Infertility can cause psychological problems, including depression, anxiety, fear, anger, hatred, aggression, shame, despair, low self-esteem, emotional imbalance, and guilt feelings (8-11).

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Regarding the social dimension, the consequences of infertility can be the social stigma, social isolation, and disturbance in social relationships because of blame, loss of social status, and even violence (12-14). The World Health Organization defines violence against women as any violent and gender-based behavior that causes physical, sexual, or psychological harm or any suffering to women. As this type of behavior is within the framework of the family and between the husband and wife, it is interpreted as spousal abuse, which is the most common type of violence (15, 16).

Male violence in the family context involves a variety of dimensions, including physical violence (kicking, pushing, assaulting by hand or other means), psychological violence (threatening, humiliating, verbal blaming, scandal), social violence (controlling women's behavior, social isolation, prohibition of communication with others), economic violence (eliminating financial in dependence, preventing economic participation), and sexual violence (sexual activity by force and without consent of a woman) (17).

Domestic violence against women has always been regarded as a concern not only in developing societies but also in developed societies, based on cultural and indigenous components (18). Various statistics have been reported concerning the prevalence of violence against infertile women. The results of a meta-analysis showed that the prevalence of violence was equal to 47.163% (95% CI 34.660 to 59.850%)(19). Also, the prevalence rates of violence for non-immigrant Jewish people in Israel were reported as 18.5% and 1.5% for psychological and physical violence, respectively (20). In a study on infertile women in Turkey, the prevalence rates of psychological, sexual, and physical violence were 76.5%, 4.4%, and 17.6%, respectively (13). In a study in Egypt, the prevalence rates of psychological, sexual, and physical violence were 8%, 1%, and 21.4%, respectively (21).

In Iran, various studies also show violence against women. In a study in Rasht City, the prevalence rates of psychological, sexual, and physical violence were 44.13%, 30.09%, and 33.88%, respectively (22). In another study in Mazandaran Province, the prevalence rates of psychological, sexual, and physical violence were 85.8%, 28.2%, and 25.9%, respectively (23).

Although infertility seems to be related to couples, the family and their relatives, whether willingly or unwillingly, with their annoying behaviors, can affect infertility problem and especially infertile women. Rejection, confrontation with wrong beliefs, interference, getting labels and blame, treacherous acts of the family and the community that can harm many infertile couples, especially women, create a new dimension of violence against infertile women (22, 24).

Different studies have been carried out on the factors related to violence against infertile women all over the world. The results showed that among various factors related to violence, some are infertility related, and some are not. These infertile-related factors are unwilling marriage (arranged marriage vs. love marriage), age of married couples, and duration of the marriage. Addiction, ethnicity, education, monthly income, duration of infertility, and spouse's job are other correlated factors with violence (3, 13, 21, 25, 26). However, some other studies did not report any relationship between the incidence of violence and individual factors or infertility related factors (2, 27, 28).

Cultural, geographical, and ethnic factors affect the type, frequency, or severity of violence. Besides, there is the widespread nature of violence and its negative consequences on women and society and lack of adequate studies with completely specific violence collection tools for infertile women in Iran. Considering these issues, the present study aimed to investigate the extent of violence against infertile women and its related factors. Armed with the results of this study, the health care team, including physicians and midwives, could consider the symptoms of abusing husband and their violence towards women.

Materials and Methods

This cross-sectional study was conducted on 245 women with primary infertility, who referred to the infertility centers in Rasht City, Iran. The target population was a group of infertile women with primary infertility referred to the infertility centers in Rasht City (Infertility Clinic of Alzahra Hospital and Mehr

Infertility Institute) from September to December 2017. These two centers are the most equipped and referral infertility treatment centers in Guilan province. The sample size was based on the results of Feizbakhsh et al (3), by considering α 95% confidence interval and the estimated error rate of 6%, which was determined as 245. Based on the number of monthly referring patients to each center, 81 patients were considered as referring to the Infertility Clinic of Alzahra Hospital and 164 patients to Mehr Infertility Institute.

$$n \geq \frac{SD^2 \times Z^2_{1-\frac{\alpha}{2}}}{d^2}$$

Sequential sampling method was adopted in which a group of subjects who were available in selected infertility centers was picked in a given time interval. The inclusion criteria for the participants consisted of having primary infertility and the absence of spouse's infertility confirmed by the gynecologist based on preclinical assessment of the male and female reproductive system (sperm analysis, hormonal tests, radiography, ultrasound), having writing literacy, lacking stepchild, and the willing to fill in the informed consent form completely. The exclusion criteria included lack of consent for participation in the study and delivering incomplete questionnaires.

A two-part self-structured questionnaire was used in the data collection procedure. The first part was designed to collect demographic characteristics of the couples which consisted of 26 questions about age, occupation, education, ethnicity, average monthly income, age at time the current marriage, the number of marriages, current drug consumption or the history of drugs abuse (cigarettes, opium, heroin) , having a family relationship with each other before marriage (family marriage/blood relative), duration of married life, satisfaction with their marriage, history of husband's conviction or being imprisoned, history of physical violence in their families before wedding, housing status, family type, duration of infertility, duration of infertility treatment, frequency of infertility treatment attempts (such as in vitro fertilization ,intrauterine insemination, gamete intra fallopian transfer, zygote intra fallopian transfer, intra cytoplasmic sperm injection , and ovum donation).

The second part designed by Onat (24) is "Infertile Women's Exposure to Violence Determination Scale "It consists of 31 questions in 5 domains; Domestic violence (11 questions), Social pressure (7 questions), Punishment (6 questions), Exposure to traditional practices (4 questions), and Exclusion (3 questions), which are specifically dedicated to infertile women at risk of violence. The answers to the questions in this scale are scored based on a 5-point Likert-type scale (never = 1, rarely =2, sometimes = 3, often = 4, always = 5). The total score was calculated from 31 to 155, which was obtained by adding points of all items; the higher the score means the more exposure to violence. To determine the amount of violence in each area, the sum of the obtained points was used in response to the items in that area and ultimately the level of violence in each area was reported as a mean value.

To determine the validity of the scale, the method of face and content validity was used. The first and second part (after translation and back translation) of the questionnaire was investigated by 12 academic faculty members of the Guilan University of Medical Sciences. After collecting the suggestions and making the necessary corrections, the final tool was adjusted. Also, to ensure the validity of the second part of the questionnaire, content validity index (CVI) and content validity ratio (CVR) for every single question were used to calculate the content validity index. About CVI, all questions in three sections had the simplicity, clarity, and relevance values of more than 0.92, and the CVR obtained in all questions was above 83.3%.

To measure the reliability of questionnaire, two methods used were the Cronbach alpha (to assess the internal consistency) and test-retest (to evaluate the repeatability) after completing the questionnaire by 20 eligible infertile women.

Regarding the reliability evaluation by test-retest method, 20 samples were investigated in two stages with 14 days intervals and retest reliability coefficients in all domains was obtained as domestic violence (93.5%), social pressure (92%), punishment (93%), exposure to traditional practices (97%), exclusion (87%), and the total questionnaire (96%). These figures indicate the reliability of the questionnaire. Also,

the Pearson correlation coefficients was used to examine the correlation between the results of the evaluation tests in every domain of the scale, including domestic violence (r = 0.996), social pressure (r = 0.992), punishment (r = 0.991), exposure to traditional practices (r = 0.996), and exclusion (r = 0.967), which indicated that the correlation between the scores before and after the significance level is 0.01 and the reliability of the questionnaire is significant.

The School of Nursing and Midwifery of Guilan University of Medical Sciences approved the study project, and the Research Deputy of the related university issued a permit. With the presence of a researcher at the Rasht infertility centres, the research samples were assured that their personal information would remain completely confidential and be used exclusively for this research project. After filling the informed consent form, all of the eligible infertile women were asked to complete the questionnaires.

The obtained data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics, including the Kolmogorov-Smirnovtest, the Spearman correlation coefficient, Mann-Whitney test, and Kruskal-Wallis (to examine the correlation between demographic data and total violence score). Logistic regression model was used to determine the predictors of violence. In this model, the total score of violence was classified into two categories below average (mean 50.93) and above average, and then the predictors of violence related to the logistics regression model by Backward LR method with the probability of variable entry and exit in the model equal to 0.05 and 0.1 were performed. Data analysis was done in SPSS version 22. Statistical significant level was set at less than 0.05.

Results

Of 1200 infertile women referring to the Al-Zahra Hospital (Infertility Clinic) and Mehr Infertility Institute, 245 eligible infertile women participated in the study. The mean± SD age of the women was 30.38 ± 6.05 years ranged 18-49 years, the spouse age (year) 33.56±6.22, monthly income 550±360, the duration of marriage (year) 6.96±4.36, the age of women at the time of the current marriage (year) 23.42±5.61, the age of spouse at the time of the current marriage (year) 26.60±5.56, duration of infertility (month) 60.17±49.09 and Duration of infertility treatment (month) 46.26±45.11.

The study results showed that 66.1% of women were housewives; 42% of women had a university education. About 88.6% of the women married willingly, and 43.3% tried more than two times for infertility treatment (Table1).

The study results also showed that the mean± SD total score of violence against women was 50.93 ± 18.76 (Table2).

Because of the unequal number of questions in different domains of the questionnaire, to compare the score of violence between domains, the percentage of each domain was calculated, and then the Friedman's statistical test was used for comparison. The results of this test showed a significant difference between the domains (P=0.0001). According to the results of this test, the highest and lowest scores were found in the field of exposure to traditional practices (44.37%) and domestic violence (26.98%), respectively.

There was a direct relationship between the total score of violence and the duration of the marriage (P=0.001, r=0.215), duration of infertility (P=0.0001, r=0.250) and duration of infertility treatment (P=0. 0001, r=0.231), while there was a reverse relationship between the total score of violence and age of the women at the time of marriage (P=0.008, r=-0.169) and the age of the men at the time of marriage (P=0.0001, r=-0 . 239) (Table 3).

Also, there was a significant relationship between the total score of violence and the women's job (P= 0.05), husbands' job (P=0.006), women's education (P=0.016), husbands' education (P=0.019), family relationship with husband (P=0.012), marital satisfaction (P=0.036), and the frequency of infertility treatment (P=0.016) , so that the highest mean ranked score of violence was observed in women who were farmer or worker with low education and the husbands who were unemployed with low education.

Women who were a family member of their spouse, as well as women who were unwillingly married (arranged marriage vs. love marriage) had experienced more violence.

Table 1. Frequency distribution of the demographic variables studied in the sample

variable	Frequency (%)
*Women occupation	
Housewife	162 (66.1)
Worker	1 (0.4)
Farmer	5 (2)
Employee	49 (20)
Businesswoman	28 (11.4)
Spouse's occupation	
Unemployment	10 (4.1)
Worker	48 (19.6)
Farmer	19 (7.8)
Employee	78 (31.8)
Businessman	90 (36.7)
The number of marriages	
Once	240 (98)
Twice	5 (2)
The number of Spouse's marriages	
Once	233 (95.1)
Twice	12 (4.9)
Women's education	
High school	69 (28.2)
Diploma	73 (29.8)
University	103 (42)
Spouse's education	
High school	71 (29)
Diploma	66 (26.9)
University	108 (44.1)
Having a relative relationship with each other	
Yes	64 (26.1)
No	181 (73.9)
Housing status	
Owner	140 (57.1)
Rental house	105 (42.9)
Wanted marriage	
Yes	217 (88.6)
No	28 (11.4)

variable	Frequency (%)
Using drugs (cigarettes, opium, heroin) by woman	
Yes	1 (0.4)
No	244 (99.6)
Using drugs (cigarettes, opium, heroin) by Spouse	
Yes	15 (6.1)
No	230 (93.9)
History of spouse as being a prisoner	
Yes	8 (3.3)
No	237 (96.7)
Physical violence in family before marriage	
Yes	18 (7.3)
No	227 (92.7)
Women's origin	
From Guilan province	162 (66.1)
From other parts of country	83 (33.9)
Family Type	
Independent	200 (81.6)
Living wi the woman's family	8 (3.3)
Living with the spouse's family	37 (15.1)
Number of the frequency of infertility treatment (IVF,IUI,ICSI,GIFT,ZIFT,Ovum donation)	
zero	39 (15.9)
Once	56 (22.9)
Twice	44 (18)
More than twice	106 (43.3)

IVF: In vitro fertilisation, IUI: Intrauterine insemination, ICSI: Intracytoplasmic sperm Injection, GIFT:Gamete Intra-Fallopian Transfer , ZIFT: Zygote Intrafallopian Transfer

Increasing the frequency of infertility treatment attempts also increased the incidence of violence against women (Table 4).

Table 2. Statistical indices for the total score and the domains of violence

Variable (minimum score-maximum score)	Mean± Standard deviation	Minimum	Maximum
Total violence(31-155)	50.93±18.76	31	109
Domestic violence (11-55)	14.84±6.20	11	37
Social pressure (7-35)	12.79±5.76	7	31
Punishment (6-30)	9.47±3.96	6	25
Exposure to traditional practices (4-20)	8.87±4.05	4	20
Exclusion (3-15)	4.95±2.69	3	15

Among the factors studied in the univariate analysis, the most important predictors of violence, were the duration of marriage (P=0.008) are the age of the spouse at the time

of marriage (p=0.048) and the occupation of the spouse (P=0.071). As the increase of each year since marriage, the chance of violence increases 1.09 times (OR = 1.091, CI 95%; 1.023-1. 163),

the age of men at the time of marriage decreases each year, the chance of violence increases 1.060 times (OR = 1.060, CI 95%; 1.001 - 1.125), and the spouse's job (workless) increases the chance of violence by 1.22 times (OR = 01.22, CI 95%; 0 .983-1.52) (Table5).

Table 3. The relationship between violence and quantitative factors based on Spearman correlation test

Variable	Mean± Standard deviation	Spearman's correlation-coefficient	Pvalue*
The duration of marriage(year)	6.96±4.36	0.215	0.001
The age of women at the time of the current marriage(year)	23.42±5.61	-0.169	0.008
The age of spouse at the time of the current marriage(year)	26.60±5.56	-0.239	0.0001
Duration of infertility (month)	60.17±49.09	0.250	0.0001
Duration of infertility treatment (month)	46.26±45.11	0. 231	0.0001

*Spearman Test

Table 4. The Relationship between Violence and Quality Factors of Study Based on Mann-Whitney and Kruskal Wallis Tests

Variable	Mean± Standard deviation	Mean Rank	P value
Women occupation			
Housewife	51.14±18.69	124.80	
Worker and farmer	72.17±21.94	191.42	
Employee	48.51±19.35	108.28	0.050*
Businesswoman	49.39±15.21	123.68	
Spouse's occupation			
Unemployment	70.00±26.28	179.00	
Worker	55.75±20.28	141.20	
Farmer	57.84±23.97	140.61	0.006*
Employee	48.10±17.50	112.13	
Businessman	47.22±14.58	112.78	
Women's education			
High School	58.13±23.01	143.71	
Diploma	46.96±13.33	115.59	0.016*
University	48.91±17.70	114.38	
Spouse's education			
High School	57.27±22.50	142.59	
Diploma	47.55±15.59	111.42	0.019*
University	48.82±16.90	117.19	
Having a relative relationship with each other			
Yes	56.41±22.14	142.05	
No	48.99±17.07	116.27	0.012**
Wanted marriage			
Yes	49.55±17.33	119.59	
No	61.61±25.37	149.43	0.036**
Number of the frequency of infertility treatment			
zero	52.78±21.16	97.72	
Once	45.05±15.61	116.74	
Twice	49.45±18.87	117.45	0.016*
More than twice	49.50±17.93	137.91	

**Mann-Whiteny Test *Kruskal-Wallis Test

Table 5. Predictors of violence among infertile women by LR method of Logistic regression model

Variables	B	S.E.	Sig.	OR	95%CI. Lower	upper
Duration of marriage (years)	0.87	.033	0.008	1.091	**1.023**	**1.163**
Spouse age at marriage (years)	0.059	.030	0.048	1.060	**1.001**	**1.125**
Spouse job status (unemployment VS employment)	.200	.111	0.071	1.22	**0.983**	**1.52**

Discussion

Infertility is not merely a gynecological disorder and may lead to inappropriate consequences for couples and violence against infertile women. This study aimed to determine violence and its related factors in infertile women referring to infertility center of Rasht City in Iran. The mean± SD age of the women was 30.38 ± 6.05 years (age range: 18-49 y), and the mean± SD age of their husbands was 33.56 ± 6.22 years (age range: 21-56 y). The study results also showed that 20% of women and 31.8% of husbands were employees; 42% of women and 44.1% of their husbands had a university education. About 88.6% of the women willingly married, and 43.3% had more than two times infertility treatment attempts.

In our study, the mean± SD total score of violence was 50.93 ± 18.76. A study in Turkey showed the mean ± SD total score of violence was 40.5 ± 9.9 (29). In meta-analysis study in Iran, the score of violence was reported higher than fertile group (30). In both of them, the highest mean score belonged to domestic violence.

Perhaps differences in the culture of the societies have caused these differences. In some societies, the patriarchal culture and its dominance in all aspects of life have forced women to accept the violence as part of masculinity and the characteristics of manhood as well as man's authority, therefore, the likelihood of husband's violence against women in such a culture is greater (31). On the other hand, in some societies, people consider childbearing as one of the most prominent features of women. Therefore, in the case of fertility, women are always considered as the faulty one, so the woman is feeling pressure from the people around (32). Therefore, in such a culture, the probability of violence against infertile women is higher than the other types of societies.

The results of Moghaddam et al. (3) and Akyuz et al. (35) studies indicate that with increasing the duration of the marriage, infertility, and infertility treatment, the mean score of violence increases which is consistent with the results of this study. While in studies in Pakistan (33) and Turkey (2), there was no significant relationship between violence and duration of the marriage. Also, in Ardabily et al. (28) and Sami et al. (33) studies, there was no significant relationship between violence and duration of infertility. Finally, in Yildizhan et al. (2) study, no significant relationship was found between violence and duration of infertility. These differences can be due to the difference between the study tools used and the cultural differences in the communities under study.

Moreover, the results of our study show a reverse correlation between the total score of violence and the age of couples at the time of marriage, so that with the increase in the age of the couples, the mean total score of violence decreases. Similar to this study, the results of studies by Ozturk et al. (34) and Akyuz et al. (35) show that the lower age at the time of marriage the reason for the higher incidence of violence against women. However, in another study (36), there was no significant relationship between the amount of violence and the age of the married couples. The age of the couples at the time of marriage can be a correlate because of the following reasons. First, the lower age of men and women is usually accompanied by a lack of wisdom and knowledge; next, young men have a lower level of behavioral control; and finally, the power of male and female adaptation is weaker at younger ages, all of which can be the source of more violence against women (31).

Regarding the women's job in the present study, the lowest level of violence was observed among female employees and the highest rate of violence in female workers and farmers. Similar to this study, Moghadam et al. (3), Akpinar et al.

(13), and Alijani et al. (23) reported that the incidence of violence against employed women was far lower than that of housewives. However, in the study of Ardabily et al. (28) and Sami et al. (33) no significant association was found between violence and employment status.

Also, the husband's job was the factor having the least effect on the level of violence, and the highest rate of violence was seen in unemployed men. In line with this study, Moghadam et al. (3) results also indicate that the highest rates of violence are observed in families with unemployed or worker husbands while Aduloju et al. (27) did not find a significant relationship between male violent behavior and husband's occupation.

In this context, treatment costs of infertility is a stressful factor that can lead to conflicts between couples, especially if the cause of infertility the woman, and when the husband should pay for the treatment. Thus, the treatment cost is one of the effective factors in the incidence of violence against infertile women. As a result, financial independence among women can be considered as one of the factors reducing violence against women (3). In many societies, providing living expenses is the responsibility of men (16). Therefore, in such a culture, man's unemployment and its economic problems are important factors in the occurrence of family tensions and incitement of violence among infertile couples (31).

Moreover, the results of this study showed that low level of education of women and their husbands was accompanied by an increase in violence, which is in line with the results of the Iliyasu et al. study (25). However, Ardabily et al. (28) and Alijani et al. (23) did not report any significant relationship between the amount of violence and the education of women. Also, Ozturk et al. study (34), there was no statistically significant relationship between the amount of violence and the education level of the husband. So, it can be said that in educated families, the level of occurrence of violent acts is low because they know the ways to cope with conflicts in relationships (31).

Likewise, Sheikhan et al. (37) reported that the rate of violence in women with unwilling marriage is more than women who chose their spouse with satisfaction. However, no significant relationship was reported between violence and marriage type in Akpinar et al. study (13). Perhaps having sincere relationships and emotional attachment with close people, especially the wife/husband, is one of the basic needs of every human being that makes the relationship between couples joyful, friendly, reliable, sympathetic and prevents marital conflicts between them. On the other hand, forced marriage makes it difficult for couples to reconcile and thus decrease marital satisfaction, which is also considered as one of the bases for violence (31).

Also, the results of this study showed that the higher the number of infertility treatment attempts, the more the incidence of violence against infertile women. Sheikhan et al.(37) and Ozturk et al. (34) reported that the amount of violence in infertile women who had a history of fertility treatment was significantly higher than those who never used fertility treatments, which is consistent with the findings in this study. In Ozgoli et al. study (36), the incidence of violence against infertile women increases by reducing the frequency of fertility treatments, which is the opposite of the results of the present study.

The results also showed that the level of violence was higher in women who have a family relationship with their husbands, while another study in Iran (39) did not report any connection between violence and having a familial relationship with the spouse. It seems that the social and cultural statuses of some societies are in such a way that there are a lot of dependencies between the parents' families and the couples' new family (after the marriage of the children). Although this is effective in protecting the family from dependent families, sometimes interference on the part of the parent's family leads to many problems (31). Perhaps having a family relationship with husband will provide the basis for more families' interventions, which will cause more family problems and violence among infertile couples.

Logistic regression model was used to determine the predictors of violence. The most important predictors increase the likelihood of violence by increasing each year since marriage (1.09 times), by decreasing each year the age of

men at marriage (0.94 times), and the occupation (workless) of the wife (0.82 times).

Due to the duration of marriage, the results obtained in the present study are consistent with the study of Sheikhan et al. (37), while in the study of Alijani et al. (23) the duration of marriage was not recognized as a risk factor for violence against infertile women.The results obtained in the study of Akies et al. (35), and Sheikhan et al. (37) showed that the marriage of a spouse at a younger age increases the likelihood of violence, while in the study of ElKateeb et al. In Egypt (21) and Alijani et al, In Mazandaran (23), the age of the man at the time of marriage was not recognized.As well as, Ilyasu et al. (25) found that male unemployment increases the chances of violence against infertile women, while in the study, Akar et al. (17) and Adoljeh et al. (27), the occupation of the spouse was not recognized as a risk factor for violence against infertile women.

The weaknesses of this study might be that participants not have given accurate information about smoking, alcohol and drugs due to social ugliness in this country. Also, the mental condition of the participants in completing the questionnaire, which may affect the accuracy of the answers and its control, is not in the hands of them. The questionnaire used in this study, in addition to spousal violence, is to assess the various dimensions of violence against infertile women in general, so the results provide comprehensive and useful information for managers to pay attention to infertile mental health, which could be the strength of this study.

Conclusion

In our study, the participating women reported less violence compared to women in the other studies in Iran. The different result of this study might be due to the use of different tools in other studies or higher educational levels among women. Therefore, our tool is recommended to be applied in further studies. Health care providers should prevent this aspect of infertility by becoming aware of the risk factors of violence against women. Besides, to prevent the occurrence of violence against infertile women, it is recommended to establish the counseling centers in health care clinics. Economic and social empowerment of women

are based on increasing the awareness of couples regarding infertility. Emphasizing more intimate marital relationships is another factor in reducing the incidence of violence against infertile women (37).

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Conflicts of interest

Authors declared no conflicts of interest.

References

1. Zegers-Hochschild F, Adamson GD, Dyer S, Racowsky C, de Mouzon J, Sokol R, et al. The International Glossary on Infertility and Fertility Care, Oxford University Press. Human reproduction. 2017; 32(9): 1786-1801.
2. Yildizhan R, Adali E, Kolusari A, Kurdoglu M, Yildizhan B, Sahin G. Domestic violence against infertile women in a Turkish setting. International Journal of Gynecology & Obstetrics. 2009; 104(2):110-112.
3. Moghaddam F, Feizbakhsh N, Sheikhi N, Behroozi Lak T. Exposure of infertile women to violence and related factors in women referring to Urmia infertility center in 2015. Journal of Urmia Nursing and Midwifery Faculty. 2016; 13(10): 853–862.
4. Karimi FZ, Taghipour A, Latifnejad Roudsari R, Kimiaei S A, Mazloum SR, Amirian M. Cognitive emotional consequences of male infertility in their female partners: A qualitative content analysis. Electronic Physician. 2015; 7(7): 1449-1457.
5. Musa R, Ramli R, Yazmie AWA, Khadijah MBS, Hayati MY, Midin M, Ravindran A. A preliminary study of the psychological differences in infertile couples and their relation to the coping styles. Comprehensive Psychiatry. 2014; 55: S65–SS69.
6. Reis S, Xavier MR, Coelho R, Montenegro N. Psychological impact of single and multiple courses of assisted reproductive treatments in couples: A comparative study. European Journal of Obstetrics and Gynecology and Reproductive Biology. 2013; 171(1):61–66.
7. El Kissi Y, RomdhaneAB, Hidar S, Bannour S, Ayoubi Idrissi K, Khairi H, Ben Hadj Ali B. General

psychopathology, anxiety, depression and self-esteem in couples undergoing infertility treatment: A comparative study between men and women. European Journal of Obstetrics and Gynecology and Reproductive Biology. 2013; 167(2): 185–189.

8. Amani-Vamarzani S, Dusti Y, Hassanzadeh R. Psychological disorders among women with primary infertility and fertile Women. International Research Journal of Applied and Basic Sciences. 2013; 4(3):720–723.

9. Rauf MA, Salma L. Level of depression, self-esteem and life satisfaction among infertile female. European Journal of Business and Social Sciences. 2015; 4(8): 106-114.

10. Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The emotional-psychological consequences of infertility among infertile women seeking treatment: Results of a qualitative study. Iranian journal of reproductive medicine. 2014; 12(2): 131-138.

11. Loke AY, Yu PL, Hayter M. Experiences of sub-fertility among Chinese couples in Hong Kong: a qualitative study. Journal of clinical nursing. 2012; 21(3-4): 504-512.

12. Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The social consequences of infertility among Iranian women: A qualitative study. International journal of fertility & sterility. 2015; 8(4):409-420.

13. Akpinar F, Yilmaz S, Karahanoglu E, Ozelci R, Coskun B, Dilbaz B, Tekin ÖM. Intimate partner violence in Turkey among women with female infertility. Sexual and Relationship Therapy. 2019; 34(1): 3-9.

14. Karaca A, Unsal G. Psychosocial problems and coping strategies among Turkish women with infertility. Asian nursing research. 2015; 9(3):243-250.

15. Al Dosary AH. Health impact of domestic violence against Saudi women: cross sectional study. International journal of health sciences. 2016; 10(2): 165.

16. Sheikhbardsiri H, Raeisi A, Khademipour G. Domestic Violence Against Women Working in Four Educational Hospitals in Iran. Journal of interpersonal violence. 2020; 35(21-22): 5107-21.

17. Akar T, Aksakal FN, Demirel B, Durukan E, Özkan S. The prevalence of domestic violence against women among a group woman: Ankara, Turkey. Journal of family violence. 2010; 25(5): 449-460.

18. Shekarbeugi A, Mostame R. Meta-Analysis of Studies on Violence against Women. Iranian Journal of Sociology. 2013;15(2):153-77. [persian]

19. Sharifi F, Jamali J, Larki M, Roudsari RL. Domestic Violence against Infertile Women : A Systematic Review and Meta-Analysis. Sultan Qaboos University Medical Journal. 2021; 1(1): 3-25. Available at: https:/ /doi.or g/1 0.18 295 /sq um j. 5.2021.075.

20. Daoud N, Sergienko R, Shoham-Vardi I. Intimate partner violence prevalence, recurrence, types, and risk factors among Arab, and Jewish immigrant and nonimmigrant women of childbearing age in Israel. Journal of interpersonal violence. 2020; 35(15-16): 2869-2896. Available at: https://doi.org/10.1177/0886260517705665.

21. Elkateeb R. Domestic violence against infertile women. Evidence Based Women's Health Journal. 2018; 16(42): 23–29.

22. Rahnavardi M, Shayan A, Babaei M, Khalesi ZB, Havasian MR, Ahmadi M. Investigating Types and Causes of Domestic Violence against Women and Identifying Strategies to Deal with It from the Perspective of Victims. Research Journal of Pharmacy and Technology. 2017; 10(10): 3637-3642.

23. Alijani F, Keramat A, Gardeshi ZH, Khosravi A, Afzali M, Habibi F. Domestic violence and its related risk factors among women attending infertility clinic in North of Iran. American Journal of Experimental and Clinical Research. 2018; 5(2): 267–272.

24. Onat G. Development of a scale for determining violence against infertile women: A scale development study. Reproductive health. 2014; 11(1): 18-25.

25. Iliyasu Z, Galadanci HS, Abubakar S, Auwal MS, Odoh C, Salihu HM, Aliyu MH. Phenotypes of intimate partner violence among women experiencing infertility in Kano, Northwest Nigeria. International Journal of Gynecology & Obstetrics. 2016; 133(1): 32-36.

26. Farzadi L, Ghasemzadeh A, Bahrami Z, Mahini M, Shirdel H. Intimate partner violence against infertile women. Journal of Clinical Research and Governance. 2014; 3(2): 147–151.

27. Aduloju PO, Olagbuji NB, Olofinbiyi AB, Awoleke JO. Prevalence and predictors of intimate partner violence among women attending infertility clinic in south-western Nigeria. European Journal of Obstetrics & Gynecology and Reproductive Biology. 2015; 188: 66-69.

28. Ardabily HE, Moghadam ZB, Salsali M, Ramezanzadeh F, Nedjat S. Prevalence and risk factors for domestic violence against infertile women in an Iranian setting. International Journal of Gynecology & Obstetrics. 2011; 112(1):15-17.

29. Kahyaoğlu Süt H, Ozturk S. The Relationship between Exposure to Violence from Husband and Their Families and Relatives and Sexual Dysfunction in Women with Infertility. Ege Üniversitesi Hemşirelik Fakültesi Dergisi. 2021;

37(1): 39-46.

30. Zarif Golbar Yazdi H, Aghamohammadian Sharbaf H, Kareshki H and Amirian M. Psychosocial Consequences of Female Infertility in Iran: A Meta-Analysis. Front. Psychiatry. 2020; 11: 518961. doi: 10.3389/fpsyt.2020.518961.

31. Salarifar M. An explanation of the causes and grounds of domestic violence.Studies in Islam and Psychology. 2009; 3(4):7-41.

32. Karimi FZ, Taghipour A, Latifnejad Roudsari R, Kimiaee SA, Mazloum SR, Amiria M. Psycho - social effects of male infertility in Iranian women: a qualitative study. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2016; 19(10): 20-32.

33. Sami N, Ali TS. Domestic violence against infertile women in Karachi, Pakistan. Asian Review of Social Sciences. 2012; 1(1): 15-20.

34. Ozturk R, Taner A, Guneri SE, Yilmaz B. Another face of violence against women: Infertility. Pakistan journal of medical sciences. 2017; 33(4):

909-914.

35. Akyuz A, Seven M, Şahiner G, Bilal B. Studying the effect of infertility on marital violence in turkish women. International journal of fertility & sterility 2013; 6(4): 286-293.

36. Ozgoli G, Sheikhan Z, Zahiroddi A, Nasiri M, Amiri S, Kholosi Badr F. Evaluation of the prevalence and contributing factors of psychological intimate partner violence in infertile women. Journal of Midwifery and Reproductive Health. 2016; 4(2): 571–581.

37. Sheikhan Z, Ozgoli G, Azar M, Alavimajd H. Domestic violence in Iranian infertile women. Medical Journal of the Islamic Republic of Iran. 2014; 28: 152–160.

38. Aghakhani N, Sharif Nia H, Moosavi E, Eftekhari A, Zarei A, Bahrami N, Nikoonejad AR. Study of the types of domestic violence committed against women referred to the legal medical organization in Urmia-Iran. Iranian Journal of Psychiatry and Behavioral Sciences. 2015; 9(4): e244.