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Original Article

The relationship between infertility and intentional delay of childbearing

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Abstract

Background and aims: The intentional delay of childbearing and its relationship with infertility are essential questions in the minds of couples and health service providers. This study aimed to investigate the relationship between infertility and intentional delay of childbearing in couples.

Methods: This case-control study on 145 infertile couples with medical records at Al-Zahra Infertility Center of Shahrekord was in the case group, and 145 fertile couples covered by comprehensive health centers of Shahrekord were in the control group. Data were collected through a checklist and analyzed using SPSS software version 18. The chi-square test, Fisher's exact test, and independent t-test were used with a significance level <0.05. The validity of the checklist was confirmed using the opinions of experts in the research field of this study.

Results: The study's results showed no difference in intentional delay of childbearing (the duration of contraceptive use) between the case and control groups. The most common contraceptive method used by both groups was the withdrawal method. The use of condoms and oral contraceptive pills (OCP) was significantly higher in the control group, and the use of intrauterine device (IUD) was significantly higher in the case group.

Conclusion: The results of the present study showed that the duration of use of contraceptive methods is not related to infertility, but the type of contraceptive method is related to infertility, so the rate of IUD use is more observed in infertile couples.

Keywords: Infertility, Delay, Pregnancy, Contraception

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Introduction

Infertility is defined as the inability to conceive a pregnancy, usually for some time at least 12 months. However, some absolute diagnoses negate the need for some time to try to conceive (1) and are divided into two types, primary and secondary, with different causes on the female and male sides and unknown causes (1). Globally, about 10% of the population and 15% of couples during their fertility ages suffer infertility (2,3). Women and men are equally affected by the problem of infertility; in general, 35% of infertility is related to men, 35% is related to women, and 20% is related to unknown factors that can be caused by men or women (4). Prevention of pregnancy with modern or traditional methods is one of the main determinants of fertility rate (5). Contraceptive methods include tubectomy, vasectomy, pills, condoms, IUDs, and others that are used through surgery or artificial devices (6). Infertility is recognized as a devastating problem worldwide and can cause economic deprivation, social isolation, and grief (7). It can also lead to psychological complications and disorders within families and may eventually lead to divorce (8).

Marriage delay and intentional delay of childbearing are considered causes of infertility (9). The World Health Organization estimates that one in six couples experience delays in pregnancy, and the trend is increasing (10). Iran has experienced a decline in fertility in recent years (11). If this trend continues, the country will face serious consequences, such as a decline in the young labor force and an aging population (12). One reason couples choose to delay childbearing on purpose is unfavorable financial and psychological conditions. Couples intentionally delay conception until they can support their children financially and psychologically (13). The most important reasons for the decline in fertility are the postponement of the first birth and longer intervals between births (14,15).

One study found that couples who used contraceptive methods for more than two years had an increased risk of infertility (16).

On the other hand, some studies have concluded that intentional delay of childbearing is not associated with fertility (17-19). A study by Noronha et al found no association between the duration of contraceptive use and the return of fertility (20). However, the results of some studies suggest that the use of some contraceptive methods may lead to infertility (21-23). However, several studies have not been able to confirm the association between infertility and contraceptive use (1,24-26). In addition, most people believe that using contraceptives during childbearing age and before childbearing may exacerbate infertility (27) and, therefore, avoid using contraceptives for fear of infertility (28-30). However, if health service providers use the correct educational methods and educate clients on these topics, they may prevent complications caused by these methods (31).

Therefore, there is a lack of complete information about the relationship between the duration of intentional delay of childbearing and the type of contraceptive method with the occurrence of infertility in couples. The first step in identifying the existing problems is to examine the duration of married life, the duration of intentional delay of childbearing, and the duration of contraception use in these women, which can give a comprehensive overview of the challenges in this area and allow us to present more scientific and evidence-based solutions to solve these problems. Given the few studies conducted on this subject and the contradictory results of the studies, the current study was designed to investigate the relationship between infertility and intentional delay of childbearing and the duration of contraceptive use.

Materials and Methods

This case-control study was conducted on 290 couples (fertile and infertile) who obtained the necessary permits at Al-Zahra Infertility Center of Shahrekord and Health Centers Number 1 and 5 of Shahrekord, Iran, from May to August 2022.

145 infertile couples with medical records at Al-Zahra Infertility Center of Shahrekord in the case group and 145 fertile couples covered by comprehensive health centers of Shahrekord in the control group were included using a systematic (regular) random sampling method. Based on the study of Esmaeilzadeh and colleagues in 2012 in Babol, Iran (11), and using the following relationship, the required sample size was determined:

$$n_1 = \left(\frac{Z_{1-\frac{\alpha}{2}} \times \sqrt{\overline{pq}\left(1+\frac{1}{k}\right)} + Z_{1-\beta} \times \sqrt{p_1 q_1 + \frac{p_2 q_2}{k}}}{\Delta} \right)^2 \qquad n_2 = k \times n_1$$

The two groups' inclusion criteria included not suffering from diseases such as hypothyroidism and diabetes and being willing to participate in the study.

Inclusion criteria in the case group were an age range of 17–49 years and diagnosed infertility.

Inclusion criteria in the control group were current pregnancy, breastfeeding or having a child, and no previous history of infertility diagnosis.

The exclusion criteria in the two groups' common criteria were failure to complete all items of the checklist.

To check the validity of this study's checklist, 10 faculty members related to the research field reviewed it, and then the checklist was modified according to their opinions.

The case group was selected by random sampling method by referring to Al-Zahra Infertility Center of Shahrekord (It is the only infertility clinic in Shahrekord), selecting the samples among the files in the infertility clinic, and collecting the desired information from the information recorded in the files; if incomplete, the information was completed by making a phone call to the phone number recorded in the file.

The control group was selected using the convenience sampling method (In order to match the control group with the case group, this sampling method was used in the control group) by referring to Health Centers Number 1 and 5 of Shahrekord because they covered a high population and were located in two geographically different places. The convenience sampling method was used to select the control group and match the samples with the case group among eligible couples with the same criteria (couple's marital age, presence or absence of underlying medical conditions, and alcohol, drug, or tobacco use).

The required information was obtained through the information recorded in the couple's medical file. If the checklist questions were not answered, the information was completed by calling the phone number recorded in the file.

Data were collected using checklists that included common couple characteristics such as age, length of the marriage, contraceptive methods, and the duration of using contraceptive methods (the measure of intentional delay of childbearing). Variables such as infertility duration, type of infertility, and cause of infertility were specific to the case group, and the number of pregnancies, the age of the last child, and the number of children were specific to the control group.

Statistical analysis

Data were analyzed using SPSS software version 18 (SPSS Inc., Chicago, IL), employing the chi-square test, Fisher's exact test, and independent *t*-test with a significance level < 0.05.

Results

The study was conducted on 290 couples, including 145 infertile couples and 145 fertile couples. The studied samples were homogenous in terms of marital age, drug, alcohol, and tobacco use, and the presence or absence of underlying medical conditions. The average marriage

Table 1. Relationship of demographic variables in the studied groups

	Groups		*P* value
	Case (n=145)	Control (n=145)	
Quantitative variables (mean±SD)			
Length of marriage (months)	95.39±65.03	77.51±57.23	0.014*
Qualitative variables, No. (%)			
Presence of current pregnancy			<0.001*
Yes	1 (0.7)	89 (66.4)	
No	144 (99.3)	56 (38.6)	

*$P<0.05$, independent t-test.

duration in the case group (about 8 years) was also significantly longer than in the control group (about 6 years). However, both groups were homogeneous regarding marriage age (Table 1).

The results of the present study indicated the type of contraceptive method is related to infertility so that the most commonly used contraception method in both groups (case: 50.3%, control: 46.2%) was the withdrawal method. The control group significantly used more condoms and pills and fewer IUDs than the case group ($P<0.05$). The use of injectable contraceptives in both groups was similar. It showed no difference (Table 2), and the duration of contraceptive use (the measure of intentional delay of childbearing) was not significantly different between the groups.

Discussion

This study was a descriptive-analytical case-control study aimed to investigate the association between infertility and intentional delay of childbearing and the type and duration of contraceptive use among infertile couples referring to the Al-Zahra Infertility Center of Shahrekord in 2022.

The results of the present study indicated that the most commonly used contraception method in both groups was the withdrawal method.

In this regard, studies have produced conflicting findings. Two studies conducted in Iran are in line with the present study, stating that the most commonly used contraception method by the studied samples was the withdrawal method (32,33). At the same time, contradictory results can be seen in other studies, with condoms and IUDs rated as the most commonly used methods of contraception in some studies (34,35). A study by Esmaeilzadeh and colleagues reported that oral contraceptive pills (OCP) were the most commonly used method by fertile and infertile couples to prevent pregnancy (11).

The contradictions between these studies and the present study may be due to differences in study type and sample size; this study is a case-control study, whereas the study by Esmaeilzadeh et al was descriptive. On the other hand, this study looked at all types of contraceptive methods. In contrast, the study by Esmaeilzadeh et al looked at OCP, IUD, and tubal ligation methods, which could be another reason for the difference in the results of these studies.

Table 2. Relationship of the types of contraceptive methods with the studied groups

Type of contraceptive method	Groups		*P* value[a]
	Case (n=145) No. (%)	Case (n=145) No. (%)	
Condoms	20 (13.8)	35 (24.1)	<0.001*
Pills	6 (4.1)	25 (17.2)	
Injectable (1-month and 3-month ampoule)	2 (1.4)	2 (1.4)	
IUD	3 (2.1)	2 (1.4)	
Withdrawal	73 (50.3)	67 (46.2)	
Lack of contraception	41 (28.3)	14 (9.7)	

Abbreviations: IUD: Intrauterine device.
$P<0.05$, [a] Fisher exact test.

The results of the present showed no statistical association between the duration of contraceptive use (intentional delay of childbearing) and infertility.

The results of some studies were in line with our findings (18,19), e.g., the duration of using various contraceptive methods in the study by Noronha and colleagues was not related to the fertility return rate (20), and the duration of using contraceptive methods was not even related to the type of infertility, i.e., primary or secondary infertility (17). However, another study by Khatun and colleagues found a significant association between the duration of contraceptive use and infertility, reporting that couples using contraceptive methods for more than two years had an increased risk of infertility (16).

The contradiction between this study and our study may be due to the difference in the study type and sample size; the present study was a case-control, while the other study was cross-sectional descriptive. The difference in the type of data collection may be another cause of this contradiction because most of the data of the present study was obtained from the data recorded in the participants' files, while in the other study, the data were collected through interviews; as a result, the possibility of error in recalling retrospective information was less in our study.

The present study found a significant association between the type of contraceptive method and infertility, with the control group using more condoms and pills and fewer IUDs than the case group. However, there was no difference in terms of the use of injectable contraception between the groups.

The results of most of the studies on the types of contraceptives used conflicted with the results of the present study. In the study by Esmaeilzadeh and colleagues, the use of birth control pills, IUD, and tubal ligation was significantly higher in the control group compared to the case group (11). The results from another study in Yazd showed no association between IUD use and infertility (25). The results of a study by Noronha and colleagues also suggested that there was no difference between the use of different types of hormonal and non-hormonal contraceptives in terms of the duration of fertility return (20).

The contradictions between these studies and the present study may be due to the different types of study; while the other studies were cross-sectional and cohort, ours was a case-control study. Differences in sample sizes and sampling methods can also be the reason for contradictions.

The studies carried out were mainly different from the present study in terms of the type of study method, the type of sampling method, and the number of samples.

Limitations of the study

Since the subject of the research is related to couples' infertility, according to the cultural restrictions, it was expected that the participants would refuse to apply accuracy in answering. However, the researcher assured the participants that the information would be confidential. obtained and providing appropriate guidance, these limitations were removed. On the other hand, due to the study's retrospective nature, there was a possibility of a recall error due to referring to the participants' memory. In order to minimize this error, the researchers first tried to collect the required information from the information recorded in the participants' files and then, If some information was missing in the file, referred to the participants and helped to fix the error by giving them enough time and asking questions in a calm atmosphere.

Conclusion

The results of the present study showed that the duration of use of the contraceptive method is not related to infertility. However, the type of contraceptive method is related to infertility, so the rate of IUD use is more observed in infertile couples. Since for a large number of couples and healthcare providers, the relationship between the intentional delay of pregnancy and infertility is questioned, the above findings can be used in the field of couples counseling, which can be done by informing couples about the contraceptive methods that can be used with Infertility was related to reducing the possibility of infertility in couples and the problems caused by it. On the other hand, considering the contradictions and ambiguities in this field and the limitations of the current research, we recommend more studies with different sample sizes and study methods. be done differently in this field.

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Authors' Contribution

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Competing Interests

The authors declare that they have no conflicts of interest.

Data availability Statement

All data and supplementary material are available upon request from the corresponding author.

Ethical Approval

This research is approved by the Research Council of Rafsanjan University of Medical Sciences, Rafsanjan, Iran, with the code of ethics IR.RUMS.REC.1400.173 and Grant Id:400172.
The samples participated in the study after signing the informed consent form.

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