Evaluation of lifestyle and endometriosis in infertile women referring to the selected hospital of Tehran University Medical Sciences

Mohammad I. Vaghar[1]

[1]Department of Nursing, Faculty of Nursing and Midwifery, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran

Abstract

Background and Aim: Endometriosis is a chronic and common disease in the world in which living endometrium stroma and glands are found outside the uterus. The presence of this tissue in different parts of the body causes various symptoms that have an adverse effect on women's quality of life, fertility rate, and productivity. The aim of this study was to determine the relationship between lifestyle and endometriosis in infertile women referred to the selected hospital of Tehran University of Medical Sciences. **Materials and Methods:** The nature of this study is descriptive-comparative. The convenient sampling method is used among all infertile women undergoing laparoscopy, in group 1 (with endometriosis diagnosis) and group 2 (without endometriosis). The sample size is estimated to be 125 in each group according to the Cochran formula and with the alpha coefficient of 0.05. Data analysis was done using SPSS software version 20. **Results:** There was a direct and significant relationship between the probability of developing endometriosis and age, education level, and regularity of menstruation variables so that with the increase in each of the above variables, the probability of the disease increases. There was a significant and inverse association between the incidence of endometriosis and the body mass index (BMI) variable, which means that with the increase in this variable, the risk of endometriosis in individuals is reduced. **Conclusion:** This study suggests that high age, low BMI, menstrual cycle regularity, and education have a strong relationship with endometriosis in infertile women, and there was no relationship between lifestyle and the incidence of endometriosis among them.

Keywords: Endometriosis, infertility, laparoscopy, lifestyle

Introduction

Endometriosis is a chronic and common disease in the world in which living endometrium stroma and glands are found outside the uterus.[1] The presence of this tissue in various parts of the body causes various symptoms that have an adverse effect on women's quality of life, fertility rate, and productivity.[1,2] Finding effective risk factors of the disease and educating the people in the society can be a great help in reducing the exposure to these factors, finding people at risk, and appropriate screening because early diagnosis of this disease can have a significant effect on increasing the response to treatment and reducing complications in patients.[3,4] Therefore, extensive experiments and diverse research have been carried out on finding risk factors and appropriate diagnostic criteria. However, no definitive and conclusive results have yet been achieved. Besides, there is no accurate and sufficient information on the factors affecting the disease in Iran. Therefore, the authors decided to study the relationship between the risk factors associated with endometriosis and prevent the increase in incidence, severity of the disease, and its impact on the patients' life course by providing suggestions. The aim of this study is to determine the relationship between lifestyle in the form of nutrition, rest

Address for correspondence: Dr. Mohammad I. Vaghar, Department of Nursing, Faculty of Nursing and Midwifery, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran. E-mail: drislamivaghar@yahoo.com

Access this article online
Quick Response Code:
Website: www.jfmpc.com
DOI: 10.4103/jfmpc.jfmpc_496_19

How to cite this article: Vaghar MI. Evaluation of lifestyle and endometriosis in infertile women referring to the selected hospital of Tehran University Medical Sciences. J Family Med Prim Care 2019;8:3574-7.

and activity, smoking and alcohol consumption, and developing endometriosis.

Materials and Methods

The nature of this study is descriptive-comparative. The population of this study includes all infertile women laparoscopy at Arash Women's Hospital during 2016–2017. The sample size is estimated to be 125 in the control and case groups, and convenient sampling was used. Inclusion criteria in this study include patients with confirmation of infertility diagnosis, age 15–45 years, and willingness to participate in the study, and the exclusion criteria included reluctance to participate in the study.

In this research, demographic and standard lifestyle questionnaires are used. The lifestyle questionnaire included nutrition, rest and activity, and smoking and alcohol consumption. The lifestyle questionnaire has 30 questions including 9 questions about nutrition, 16 questions about activity and health, and 5 questions about smoking, which is set based on the 6-point Likert scale. Then, for each Likert scale, a numerical score of 1–6 is assigned and the numerical score of the questions for each area is summed up and the average is calculated. Then the average is classified as weak, moderate, and good scales.

Statistical analysis of data

Data analysis is done by the SPSS software version 20. P value <0.05 is determined to determine the statistical significance level. After examining the normal distribution of data, using Kolmogorov–Smirnov test or normal distribution curve, quantitative variables are used by t-test and Chi-square test to compare qualitative variables.

Results

In this study, 250 subjects (125 in the control group and 125 in the endometriosis group), who referred to the infertility clinic of Arash Women's Hospital during the years 2016 and 2017 for laparoscopic surgery, were evaluated. The mean age in the control group was 30.2 years with a standard deviation of ±5.8 years and that of the group with endometriosis was 31.59 years with a standard deviation of ±5.4 years.

According to the results of the test [Table 1], there was a significant difference between age and body mass index (BMI) variables between the control and case groups. Accordingly, with increasing age, the risk of endometriosis is increased. Lower BMI was also reported in the group with endometriosis, meaning that the subjects in this group were significantly thinner than the control group.

The lifestyle questionnaire has three areas of health and activity, nutrition, and smoking. In Table 2, the information on health status and physical activity is presented in the case and control groups. There was no significant difference between the groups in terms of physical health and activity.

Table 1: Comparison of age and BMI in control and case groups

Variable	Control group		Case group		OR (95% CI)	P
	No.	Mean SD	No.	Mean SD		
Age	125	30.2 ±5.8	125	31.59 ±5.4	1.06 −1.008 1.068	0.025
BMI	125	32.26 ±4012	125	23068 ±3058	0.812 (0.911-0.978)	0.002

BMI: body mass index; OR: odds ratio; CI: confidence interval; SD: standard deviation

Table 2: Comparison of health and activity in the case and control groups

Variable		Control group No. (%)	Case group No. (%)	Chi-square test	P
Health and activity	Poor	6 (4.8%)	8 (6.4%)		
	Moderate	32 (25.6%)	34 (27.2%)	11.463	0.187
	Good	87 (69.6%)	83 (66.4%)		

The next examined area is nutritional status. There was no significant relationship between the case and control groups with Chi-square test ($P = 0.377$). Moreover, both case and control groups were compared in terms of having fruits and vegetables, red meat and eggs, and fatty foods, and similar to the overall nutritional status, no significant difference was observed.

In the studies on smoking history, according to the findings in Table 3, only three of the subjects had a history of smoking, of which two were in the control group and one was in the case group and only one case had a history of alcohol consumption, which was in the control group. According to P value, there is no significant difference between the two groups in terms of smoking. When comparing the lifestyle status in the case and control groups, no significant relationship was found between lifestyle and endometriosis in terms of health and activity, nutrition, and smoking.

Discussion

This study was performed on 250 individuals who referred to the infertility clinic of Arash Women's Hospital affiliated to the Tehran University of Medical Sciences to perform laparoscopic surgery during 2016–2017. After collecting data and performing statistical analysis, the following results were achieved.

There was a direct and significant relationship between the incidence of endometriosis and the age variable, so that with an increase in the age of the patients, the risk of endometriosis increased.

Sangi-Haghpeykar and Poindexter[5] reported similar results in their study that the risk of endometriosis increases with age. Eskenazi and Warner[6] also reported that age is the only individual social factor that has a consistent and positive relationship with the risk of endometriosis.

Table 3: Comparison of nutritional status in the case and control groups					
Variable		Control group No. (%)	Case group No. (%)	OR (95% CI)	Chi-square test	P
Nutritional status	Poor	25 (20%)	21 (16.8%)	0.836 (2.188-0.804)	2.252	0.377
	Moderate	23 (18.4%)	28 (22.4%)	1.327 (1.379-0.506)		
	Good	77 (61.6%)	76 (60.8%)	1	3.827	

OR: odds ratio; CI: confidence interval

However, no relationship was observed in Parazzini *et al.*, Matalliotakis *et al.*, and Pan *et al.*[7-9] It is worth noting, however, that the mean age may increase due to the collection of samples from the infertility center in both groups because individuals typically try to treat infertility at older ages. Of course, because both the control and case groups are subject to this issue and there is a significant age difference between them, the effect of this factor will be very low in terms of significance.

In addition, there was a significant and inverse association between the incidence of endometriosis and the BMI variable, which means that with the increase in this variable, the risk of endometriosis in individuals is reduced. No significant relationship was found between endometriosis and other variables of job, work style, and lifestyle in the three areas of activity and health, nutrition, and smoking.

The results of this study showed that BMI in subjects with endometriosis was significantly lower than the control group ($P < 0.002$). This is consistent with all the studies that have been done so far. For example, the results of Hediger *et al.* show that patients with endometriosis have a low BMI at the time of diagnosis and throughout the history of the patient.[10] Calhaz-Jorge *et al.* showed that the risk of endometriosis in women with BMI of more than 30 kg/m^2 is about five times lower than those with BMI of 25–20 kg/m^2. They concluded that a reduction in the risk of endometriosis in obese women might be justified by irregular menstrual cycles in them due to increased estrogen levels, anovulation cycle, and retrograde of menstrual blood theory.[11] Vitonis *et al.* addressed BMI at early childhood and early puberty in women and their association with endometriosis in a prospective study and concluded that even with the elimination of the probable duration of menstruation and its regularity, it is more common among patients with endometriosis.[12]

The study of the relationship between lifestyle and endometriosis is a very novel topic that has not been widely studied. In this study, the standard lifestyle questionnaire is used and now the three areas of study are compared with the existing articles.

Physical activity and health status

The results of this study results show that there is no significant relationship between activity and endometriosis ($P > 0.05$). This result is consistent with Bonocher *et al.* that examined the relationship between physical activity and endometriosis.[13]

Nutrition status

The next studied area in the lifestyle was the nutritional status. In this study, the standard lifestyle questionnaire was used and compared nutrition once in both groups in general and once in three areas of having fruits and vegetables, red meat and eggs, and fatty foods. Given that *P* value >0.05, no significant difference was observed between the two groups.

1. In the first part, which was having fruits and vegetables, Trabert *et al.*[14] suggested increasing the intake of fruit and beta-carotene as risk factors for endometriosis, which has not been proved in this study. Contrary to the above findings, Parazzini *et al.* reported the reduced risk of endometriosis as associated with an increase in the consumption of green vegetables and fresh fruits and the reduction in the use of red meat and ham.[7]

2. In the study of having fatty and saturated fat foods, no association was found with the probability of endometriosis in this study. However, in Trabert *et al.*, consumption of more fats has contributed to a reduction in the incidence of endometriosis.[14]

3. There was no significant relationship in terms of having red meat, chicken, and eggs. However, Parazzini *et al.* reported the consumption of red meat associated with the increased risk of endometriosis.[7] Perhaps one of the reasons for this difference is the variety in the type of meat consumed and the fact that pork is not used in Iran at all; however, it is among the mostly consumed meats in the western countries. In addition, cooking method can be very effective on the material inside it, while in different cultures the type of cook is very different. Another thing is that in Muslim countries, animals are slaughtered in an Islamic way, while in the western countries they are not.

Smoking

Only three of the subjects had a history of smoking, of which two were in the control group (1.9%) and one was in the case group (1.4%). According to *P* value > 0.05, which is equal to 0.698, there is no significant difference between the two groups [Table 4]. The low number of smokers affects the result. Besides, as in Iranian culture, smoking, especially among women, is not acceptable, there is a possibility of bias among the subjects, which will affect the results. However, contradictory results are reported in other studies. Calhaz-Jorge *et al.* reported that smoking is an important factor in predicting the risk of endometriosis. People who smoked during the study were less likely to have endometriosis than previous smokers or those who never smoked.[11] Missmer and Cramer observed that

Table 4: Comparison of smoking and alcohol consumption in the case and control groups

Variable			Control group No. (%)	Case group No. (%)	OR (95% CI)	Chi-square test	P
Smoking and drinking	Cigarette	Negative	123 (98.4%)	124 (99.2%)	1.347 (6.085-0.318)	0.15	0.698
		Positive	2 (1.6%)	1 (0.8%)	1		
	Alcohol	Negative	124 (99.2%)	125 (100%)	1.358 (6.088-0.314)	0.16	0.712
		Positive	1 (0.8%)	0 (0%)	1		

OR: odds ratio; CI: confidence interval

with an increase in the number of cigarettes a day, the risk of endometriosis increased in smoking women.[15] There was no significant relationship between smoking and endometriosis in other studies.[8]

Conclusion

According to the results, it can be said that with increasing age, the incidence of endometriosis increases. Moreover, acknowledgement and awareness of the disease will make patients more aware of the symptoms of endometriosis, lead to more effective diagnosis and treatment of affected people, and reduce the complications of the disease.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Williams HE, Barsky S, Storino W. Umbilical endometrioma (silent type). Arch Dermatol 1976;112:1435-6.
2. Thomas EJ, Rock J, editors. Modern Approaches to Endometriosis. New York, NY: Springer Science & Business Media; 2012.
3. Kadivar M, Vafa A, Farahzadi A, Khani S. 6 years evaluation of prevalence of abdominal wall endometriosis in patients with definite histopathological diagnosis of endometriosis admitted in Rasool-Akram, Shariati and Atieh Hospitals in Tehran. Razi Journal of Medical Sciences 2012;18:20-6.
4. Hemmings R, Rivard M, Olive DL, Poliquin-Fleury J, Gagné D, Hugo P, et al. Evaluation of risk factors associated with endometriosis. Fertil Steril 2004;81:1513-21.
5. Sangi-Haghpeykar H, Poindexter AN 3rd. Epidemiology of endometriosis among parous women. Obstet Gynecol 2010;85:983-92.
6. Eskenazi B, Warner ML. Epidemiology of endometriosis. Obstet Gynecol Clin North Am 2012;24:235-58.
7. Parazzini F, Chiaffarino F, Surace M, Chatenoud L, Cipriani S, Chiantera V, et al. Selected food intake and risk of endometriosis. Hum Reprod 2011;19:1755-9.
8. Matalliotakis IM, Cakmak H, Fragouli YG, Goumenou AG, Mahutte NG, Arici A. Epidemiological characteristics in women with and without endometriosis in the Yale series. Arch Gynecol Obstet 2010;277:389-93.
9. Pan L, Song H, Wu B. [Reproductive activities as a risk factor of endometriosis]. Zhonghua Fu Chan Ke Za Zhi 1994;29:150-3.
10. Hediger ML, Hartnett HJ, Buck Louis GM. Association of endometriosis with body size figure. Fertil Steril 2012;84:1366-74.
11. Calhaz-Jorge C, Mol BW, Nunes J, Costa A. Clinical predictive factors for endometriosis in a Portuguese infertile population. Hum Reprod 2014;19:2126-31.
12. Vitonis AF, Baer HJ, Hankinson SE, Laufer MR, Missmer SA. A prospective study of body size during childhood and early adulthood and the incidence of endometriosis. Hum Reprod 2010;25:1325-34.
13. Bonocher M, Montenegro L, Silva R, Ferriani R, Meola J. Endometriosis and physical exercsies. Repord Biol Endocrinol 2014;12:40.
14. Trabert B, Peters U, De Roos AJ, Scholes D, Holt VL. Diet and risk of endometriosis in a population-based case-control study. Br J Nutr 2011;105:459-67.
15. Missmer SA, Cramer DW. The epidemiology of endometriosis. Obstet Gynecol Clin North Am 2013;30:1-19.