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Research Article

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Endometriosis in Iranian symptomatic patients: A systematic review and meta-analysis

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Abstract

Introduction: Endometriosis is defined as the growth of endometrial tissue outside the uterine cavity that can respond to hormonal stimulation of the ovaries.The aim of this study was evaluated frequency of Endometriosis in malignant epithelial ovarian tumor.

Methods: The methods used in this systematic review have been developed based on the Checklist Guidelines (PRISMA).The study includes cross-sectional studies, case studies, and cohort studies, and excludes case studies, letters to editors, case reports, clinical trials, study protocols, systematic reviews, and reviews.

Results: A total of 1100 women were evaluated. All studies were retrospective. According to the random effect model, the prevalence of endometriosis in 1100 was 17% for women (95% in the confidence interval 0.15-0.19 for I^2 = 87.3)

Conclusion: Our results indicated a high prevalence of endometriosis in Iranian symptomatic patients which underscores the importance of early diagnosis and considering it as a potential differential diagnosis.

Keywords: Ovarian cancer, endometriosis, malignant,epithelial ovarian tumor.

Introduction

Endometriosis is defined as the growth of endometrial tissue outside the uterine cavity that can respond to hormonal stimulation of the ovaries(1-3).This tissue may be present in the pelvis or outside the pelvis(4,5). This growth most commonly happens in the pelvic organs such as the ovaries, choledosac posterior ligament of the uterus, pelvic peritoneum, and maternal septum observed in 8% to 15% of women of reproductive age(6-8).Endometriosis outside of the pelvic is referred to endometriotic lesions elsewhere in the body, such as the cervix, vagina, intestine, urinary system, abdominal wall, and chest.Endometriosis may rarely involve the skin or subcutaneous tissue(9,10).Cutaneous endometriosis, the most common site of which is the abdominal wall, usually occurs secondary to surgery on the abdominal and pelvic wall, at the site of the scar, but can rarely occur spontaneousl(11).These cases are more common in patients with physiological scars around the umbilicus(12).Although many patients with endometriosis have no symptoms,

this disorder may be associated with menstrual cramps, intercourse pain, and chronic pelvic pain.Endometriosis is also seen in 30 to 50% of infertile women.Causes of endometriosis include infertility, family history of endometriosis, obstruction of the normal outflow of menstrual blood, history of pelvic infection and uterine disorders.Accurate and reliable results of the main causes of the disease are not available, but based on research, in addition to environmental factors, hereditary factors also play an important role in developing endometriosis, so that in people whose first or second degree relatives experienced endometriosis, the risk of this disease is significantly higher(13,14).

Methods

Inclusion criteria (eligibility criteria)

The methods used in this systematic review have been developed based on the Checklist Guidelines (PRISMA).The study includes cross-sectional studies, case studies, and cohort studies, and excludes case studies, letters to editors, case reports, clinical trials, study protocols, systematic reviews, and reviews.

Participants: The main purpose of the study was to evaluate the prevalence of endometriosis in patients presenting with common symptoms of endometriosis. The findings were collected according to the report.Sampling methods and sample size: All observational studies, regardless of their design, were included in the systematic review.The minimum sample size was 25 patients or more.

Search strategy

The searches were performed by two independent researchers and the purpose of the search was to find published studies from 1/1/2000 to 12/30/2019.Studies published in MEDLINE were searched through PubMed, EMBASE through Ovid, the Cochrane Library.For studies published in other languages, national database (Magiran and (SID, KoreaMed and LILACS) and for searching unpublished studies OpenGrey (www.opengrey.eu/) and the WHO Clinical Trials Register (who.int/ictrp) And we searched for ongoing studies.To ensure the adequacy of the studies, a list of relevant research sources or studies found by the search was read.Systematic review articles were searched using MESH phrases and open phrases in accordance with print standards.After the MEDLINE strategy was finalized, the results were compared to search other databases.Keywords used in search strategy were: ovarian cancer, endometriosis, malignant, epithelial ovarian tumor.

Select study and extract data:

The two researchers independently analyzed the titles and abstracts of the articles according to the eligibility criteria.After deleting additional studies, the full text of the studies was collected based on the eligibility criteria and information about the authors if necessary.General information (relevant author, province and year of publication), study information (sampling technique, diagnostic criteria, data collection method, research conditions, sample size and risk of bias) and output scale (prevalence of endometriosis) were collected.

Quality evaluation

The developed scale of Hoy et al. Was used to evaluate the quality of the method and the risk of bias in each observational study.This is a 10-item scale to assess the quality of studies according to their external validity (items 1 to 4 of the target population, sampling framework and minimum participation bias) and internal validity (items 5 to 9 of data collection, problem statement , Evaluates the research scale and data collection tools while item 10 evaluates the data analysis bias.The risk of bias was measured by the two researchers independently and the differences were resolved by agreement.

Collecting data

All eligible studies were included in the data collection after systematic review and the data were integrated using the accumulation

diagram.The random effects model was evaluated based on the overall prevalence of the disease among the participants.The heterogeneity of the initial studies was assessed using the I^2 test.In addition, subgroups were analyzed to determine heterogeneity based on participants age, year of publication, and country.Finally, a meta-analysis was performed in STATA14 statistical software.

Results

Study selection

A total of 197 articles were extracted through initial searches in various databases.Out of 197 essential studies identified by analyzing titles and abstracts, 166 studies were omitted due to irrelevant titles.Out of 31 existing studies, 18 articles were deleted. Out of the remaining 13 studies, 5 studies had study criteria. (figure 1).

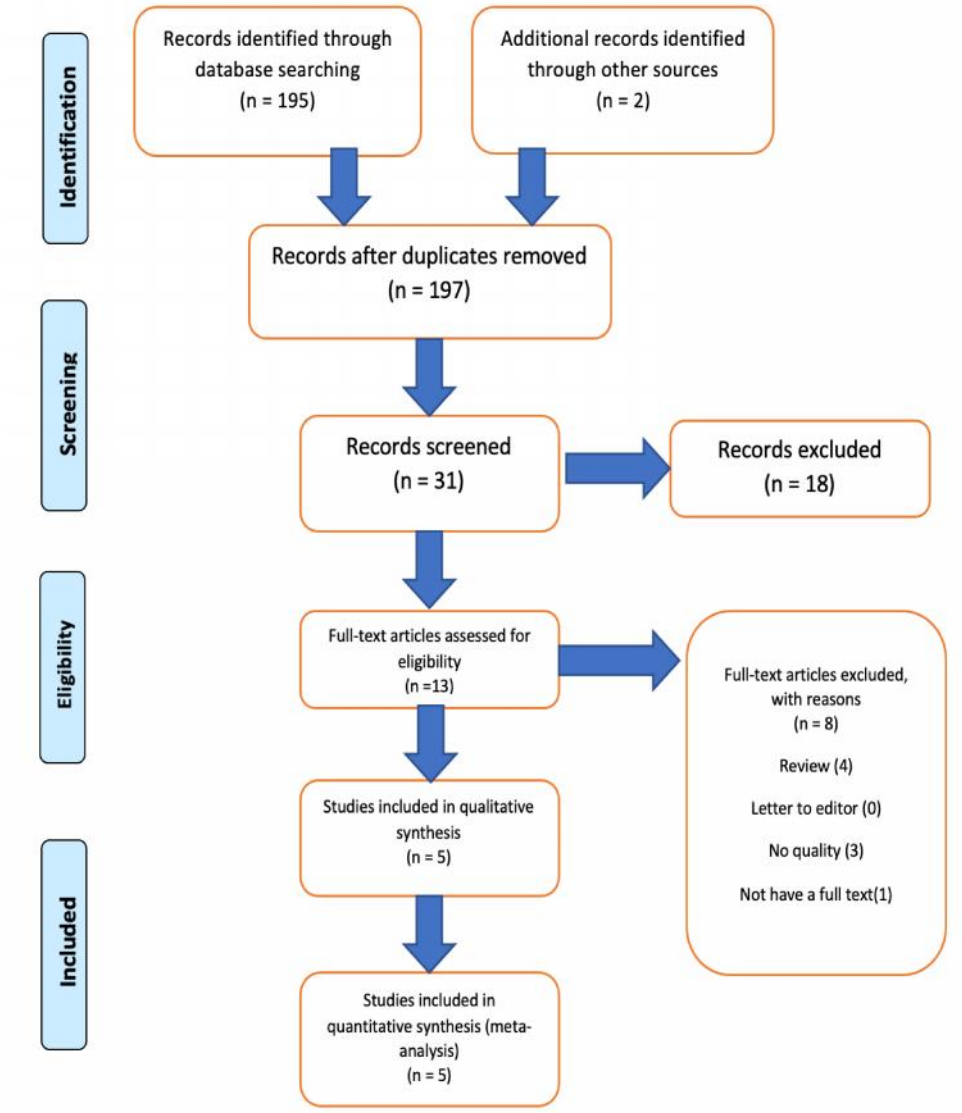

Figure 1:PRISMA follow diagram

Research specifications:

A total of 1100 women were evaluated. All studies were retrospective. A total of 5 studies from 4 provinces that met the inclusion criteria were reviewed.Among these studies, 2 studies were from Babol, and the remained studies were from Tehran, Isfahan and Shiraz.The risk of bias was low in most studies. The main method of data collection was medical records and questionnaires. (Table 1).

Table 1: Characteristics of the included studies.

Author	Publication year	Province	Patient	Prevalence	Duration	Design	Mean age	Publication bias
Kadivar [21]	2012	Tehran	323	12.3%-0.0180	2005-2010	Retro	34.98	Low
Esmaeilzadeh[22]	2014	Babol	256	29%-0.0283	2009-2013	Retro	30.80 ± 5.03	Low
Sobhan Ardakani [23]	2011	Isfahan	200	18%-0.0271	2007-2009	Retro	31.4	Low
Esmailzade[24]	2002	Babol	221	13.6%-0.0223	2000-2001	Retro	28.5	Moderate
Akbarzade[25]	2016	Shiraz	110	25.4%-0.0412	2008-2013	Retro	49.93	Low

Meta-analysis of the frequency of endometriosis:

According to the random effect model, the prevalence of endometriosis in 1100 women was 17% (95% in the confidence interval 0.15-0.19 for I^2 = 87.3) (Figure 2).

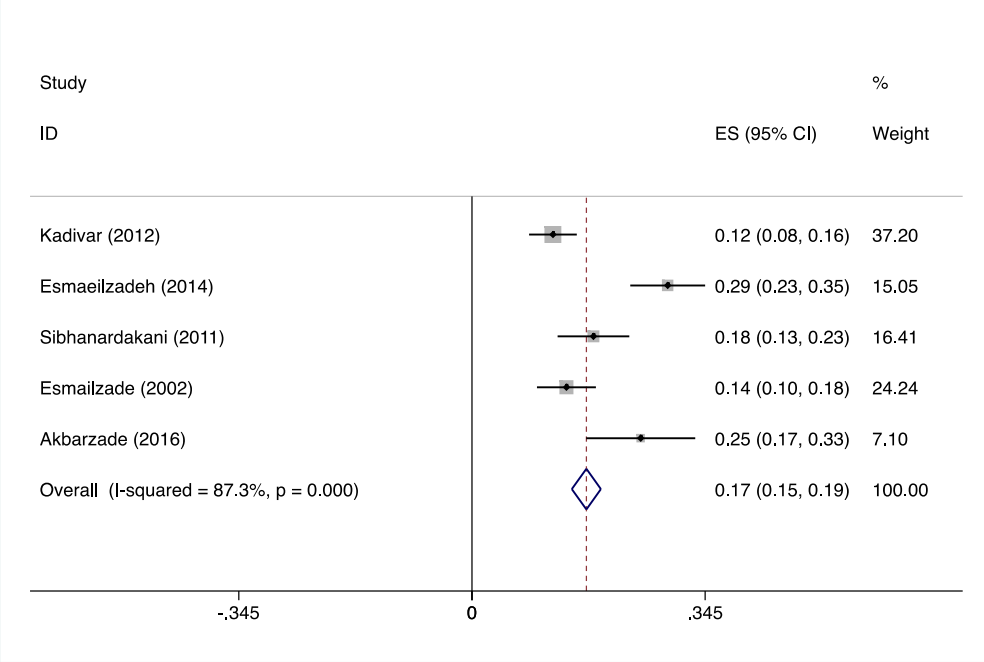

Figure 2: Meta-analysis of the frequency of endometriosis

Subgroup analysis:

Meta-regression results:

Results of meta-regression between participants' age and frequency of endometriosis:

The regression of the study was evaluated according to the relationship between the age of the participants and the rate of endometriosis.There was no significant linear trend in univariate meta-regression to explain the change in the effect of age of participants. (Figure 3).

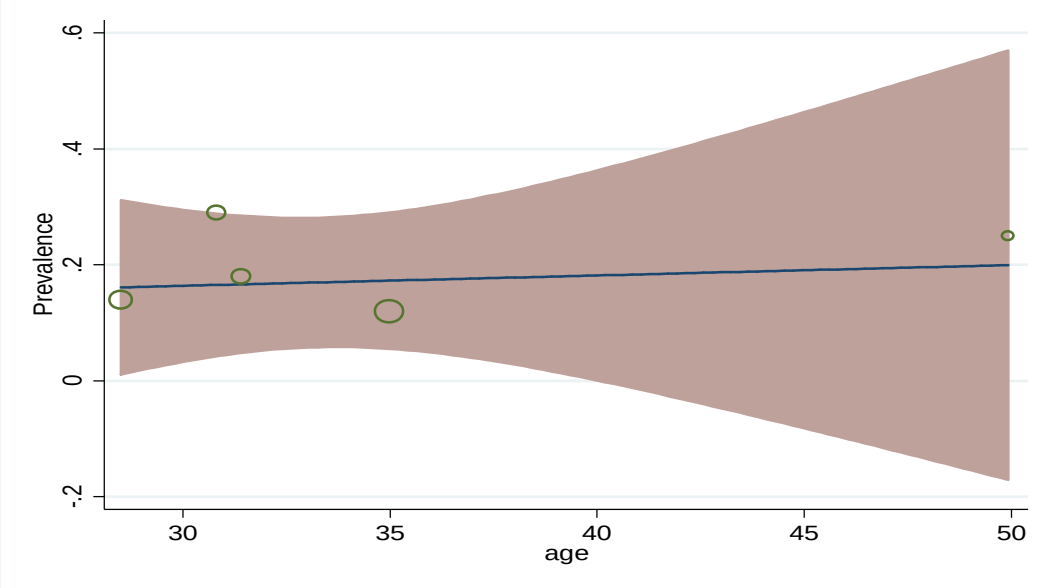

Figure 3: Meta-regression between participants' age and frequency of endometriosis

Results of meta-regression between study publication year and frequency of endometriosis:

Study regression was evaluated according to the relationship between the year of publication of the study and the rate of endometriosis.There was a significant linear increase in univariate meta-regression to explain the effect size change of the year of publication. (Figure 4).

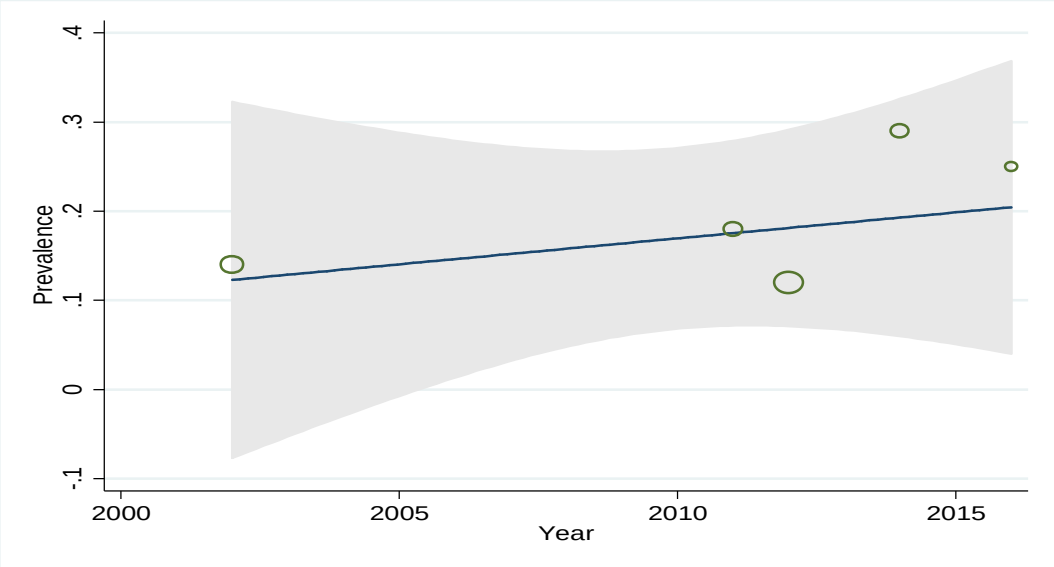

Figure 4. Meta-regression between study publication year and frequency of endometriosis

Discussion

Endometriosis was recognized more than 300 years ago as a gynecological disorder caused by abnormally active endometrial tissues in the genital tract or adjacent pelvic structures(15).The prevalence of endometriosis in ovaries is higher than other nearby organs(16).Extra-pelvic endometriosis is less common than pelvic types and is found in various organs(17). The prevalence of external pelvic endometriosis is estimated to be in the range of 9 to 15% and the most common type is abdominal wall endometriosis at the site of cesarean section.Similar results have been obtained in our study. According to the random effect model, the prevalence of endometriosis in 1100 women was 17% (95% in the confidence interval 0.15-0.19 for I^2 = 87.3).However, due to lack of data about the prevalence of different types of endometriosis we were unable to perform a subgroup meta-analysis. A recent study in USA indicated that the prevalence of endometriosis in USA was 6.1% from which 54% were in younger ages. They also reported abdominal pain as the most frequent symptom of this disorder (26).Another study conducted by VH Eisenberg reported a prevalence of 1.1% which is significantly lower than what we calculated (27). However, these inconsistencies can be a result of different populations that are examined. Because, our study included patients with high risk for developing endometriosis. There was an increasing pattern for the prevalence of endometriosis by year which can be indicative of an increased awareness among patients and doctors towards this disease. Studies provided sufficient evidence that ovarian endometriosis can higher the risk of clear-cell and epithelial ovarian cancer(28).subsequently, It is really important for doctors to consider endometriosis in patients presenting with aforementioned signs. There are reports in scientific sources of endometriosis on surgical scars after laparotomy, laparoscopy, and obstetric diagnostic procedures such as amniocentesis(18).In addition, correction of inguinal and umbilical hernias has been observed in general surgeries such as appendectomy.However, most of the reported cases after obstetric surgery have been cesarean section(19). It is believed that this condition is caused by implantation of iatrogenic endometrium in the abdominal wall.The appearance of endometriosis at the site of the surgical scar is a palpable subcutaneous mass at the site of the surgical scar with pain and swelling during menstruation that sometimes changes in size and is usually accompanied by periodic or persistent pain.Accurate diagnosis of abdominal wall endometriosis is important because in more than 50% of cases, there is also pelvic involvement that can lead to secondary infertility and re-implantation of endometrial tissue outside the pelvis.In addition, these lesions have the potential to become malignant(20). Although these changes are rare, they should be considered as lesions that grow rapidly as well as being recurrent .It is difficult to determine the incidence of endometriosis at the site of the surgical scar, but in an average period of 5 years between surgery and the onset of symptoms, it is estimated at 0.03 to 0.15%.Due to the low incidence and prevalence of abdominal wall endometriosis, which is often known as endometriosis during surgical scarring and umbilical endometriosis, epidemiological studies in this area are limited .Research has shown that increased menstrual flow and alcohol consumption are risk factors for endometriosis, while more births are a protective factor.

Conclusion

Our results indicated a high prevalence of endometriosis in Iranian symptomatic patients which underscores the importance of early diagnosis and considering it as a potential differential diagnosis.

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