Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Obstetrics & Gynaecology

Correlation of Clinical Examination and Laparoscopic Staging in Endometriosis among Infertile Women

Dr. Sayeeda Pervin[1]*, Dr. Nasrin Sultana[1], Dr. Bakhtiar Ahmed[2], Dr. Mst. Nargish Khanam[3], Dr. Zobaida Sultana Susan[4], Dr. Mst. Mafruha Haque[5], Prof. T. A. Chowdhury[6]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Dhaka Medical College, Dhaka, Bangladesh
[2]Assistant Professor and Resident Surgeon, Department of Surgery, BIRDEM General Hospital, Dhaka, Bangladesh
[3]Junior Consultant, Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka, Bangladesh
[4]Junior Consultant, Department of Obstetrics and Gynaecology, Shaheed Suhrawardy Medical College and Hospital, Dhaka, Bangladesh
[5]Junior Consultant, Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka, Bangladesh
[6]Chief Consultant and Professor, Department of Obstetrics and Gynaecology, BIRDEM General Hospital, Dhaka, Bangladesh

DOI: https://doi.org/10.36347/sjams.2025.v13i05.030 | **Received:** 13.04.2025 | **Accepted:** 19.05.2025 | **Published:** 23.05.2025

***Corresponding author:** Dr. Sayeeda Pervin
Assistant Professor, Department of Obstetrics and Gynaecology, Dhaka Medical College, Dhaka, Bangladesh

Abstract **Original Research Article**

***Background*:** Endometriosis is a significant cause of infertility in women, often underdiagnosed due to its variable clinical presentation. This study aimed to assess the correlation between clinical examination findings and laparoscopic staging of endometriosis in infertile women. ***Methods*:** This was a cross-sectional descriptive study conducted at the Center for Assisted Reproduction (CARE), Department of Obstetrics & Gynaecology, BIRDEM General Hospital, Dhaka, Bangladesh, over two years from July 2013 to June 2015. In this study, we included 127 patients undergoing diagnostic laparoscopy for evaluation of infertility during the study period at our institution. All eligible participants were recruited conveniently based on their scheduled laparoscopic evaluation for infertility. ***Results*:** The mean age of participants was 29.31 ± 4.08 years, with the majority experiencing secondary infertility (71.65%). Endometriosis was diagnosed in 18.9% of cases, with Stage I (37.5%) being the most common presentation. Severe dysmenorrhea and chronic pelvic pain were significantly associated with Stage II and Stage IV endometriosis ($p < 0.05$). Menorrhagia and dyspareunia also showed significant correlations with advanced stages. Pelvic tenderness, restricted uterine mobility, and a fixed retroverted uterus were more frequently observed in moderate to severe stages, with significant associations noted particularly in Stage II. Laparoscopy additionally revealed polycystic ovaries in 37% of cases, adhesions in 25.2%, obliteration of the Pouch of Douglas in 13.4%, and tubal occlusion in 25.9%. No abnormalities were found in 22% of patients. ***Conclusion*:** This study showed that clinical symptoms such as dysmenorrhea, chronic pelvic pain, and dyspareunia, as well as specific pelvic examination findings, are significantly associated with laparoscopic stages of endometriosis. Diagnostic laparoscopy remains essential for accurate diagnosis and comprehensive assessment of infertility-related pelvic pathologies.

Keywords: Endometriosis, Infertility, Laparoscopy, Dysmenorrhea, Polycystic ovaries, Clinical examination.

INTRODUCTION

Endometriosis is a complex and heterogeneous condition defined by the presence of endometrial tissue outside the uterine cavity. It may remain asymptomatic or present with a range of clinical symptoms such as chronic pelvic pain, dysmenorrhea, dyspareunia, dysuria, post-menstrual pain, and infertility [1]. Characterized by the presence of functional endometrial glands and stroma in ectopic locations, the disease exhibits locally invasive behavior, as first described by Thomas Cullen [2]. The initial identification of endometriosis is attributed to Carl Rokitansky, while the term itself was introduced by John A. Sampson, who also proposed the well-known theory of retrograde menstruation to describe its pathogenesis [3, 4].

The true prevalence of endometriosis remains difficult to ascertain, with studies reporting a wide range of estimates [5, 6]. It is observed in 45% to 82% of women experiencing chronic pelvic pain and in approximately 2.1% to 78% of women with infertility [7, 8]. Prevalence figures can vary significantly based on the population studied and the diagnostic methods employed. However, the condition is reported to be 6 to 21 times more prevalent among infertile women

compared to their fertile counterparts [9, 10]. Furthermore, 30% to 50% of women with endometriosis are infertile, while 25% to 50% of infertile women are found to have endometriosis [11]. Interestingly, up to 10% to 20% of fertile women may also be affected [12]. Despite being a benign condition, endometriosis often persists and progresses if left untreated, complicating both diagnosis and management [13].

Laparoscopy remains the gold standard for the definitive diagnosis of endometriosis [14]. Although several scoring systems have been developed to stage the severity of the disease, their correlation with clinical symptoms and fertility outcomes remains inconsistent [15]. The Revised American Fertility Society (AFS) classification is the most widely used system; however, it does not always accurately reflect symptom severity, predict fertility outcomes, or assess the overall impact on quality of life [16, 17]. Nevertheless, it provides a standardized method to classify the anatomical extent of the disease, and exploring its potential associations with clinical and demographic variables could be particularly useful for physicians managing subfertility in women.

In a recent audit from a tertiary care hospital, endometriosis was reported as a relatively uncommon morbidity [18]. Another recent local study, conducted over two years with 50 infertile women, reported a 24% prevalence of endometriosis, along with a strong correlation between laparoscopic staging and symptoms such as pelvic pain and dyspareunia [19]. Given the limited availability of regional data, the present study was undertaken to assess the correlation between clinical examination findings and laparoscopic staging of endometriosis in infertile women.

METHODOLOGY & MATERIALS

This was a cross-sectional descriptive study conducted at the Center for Assisted Reproduction (CARE), Department of Obstetrics & Gynaecology, BIRDEM General Hospital, Dhaka, Bangladesh, from July 2013 to June 2015. In this study, we included 127 patients undergoing diagnostic laparoscopy for evaluation of infertility during the study period at our institution. All eligible participants were recruited conveniently based on their scheduled laparoscopic evaluation for infertility.

These are the following criteria to be eligible for enrollment as our study participants:

Inclusion Criteria

a) Women aged between 20 to 40 years;
b) Female patients with primary or secondary infertility undergoing diagnostic laparoscopy for evaluation at CARE, BIRDEM;
c) Patients who were willing to participate.

Exclusion Criteria

a) Patients with infertility caused solely by male factor;
b) Patients with infertility due to chromosomal abnormalities or primary amenorrhea
c) Patients with severe medical disorders (e.g., advanced cardiac disease) are contraindicated for anaesthesia.

Study Procedure:

Each patient underwent diagnostic laparoscopy as part of their infertility workup. During the procedure, findings such as endometrial implants, ovarian endometriomas, pelvic adhesions, and tubal patency were carefully documented. The staging of endometriosis was performed intraoperatively using Raff's criteria. The surgical observations were recorded systematically and used for further analysis. Additional demographic and clinical data, such as age, body mass index (BMI), type of infertility, and presenting symptoms (e.g., dysmenorrhea, menorrhagia, dyspareunia, chronic pelvic pain), were also documented.

Data Collection Procedure:

All infertile women, whether experiencing primary or secondary infertility, who underwent diagnostic laparoscopy were included in this study after a thorough explanation of the study's aims and objectives. Participants were assured of complete confidentiality, and it was communicated that the procedure posed no harm and would aid the attending gynecologist in diagnosing and managing their condition more effectively. Informed written consent was taken from the participants. For each participant, data were collected using a structured questionnaire. A detailed medical history was obtained, and comprehensive clinical examinations were performed and recorded. Additional demographic and clinical data, such as age, body mass index (BMI), type of infertility, and presenting symptoms (e.g., dysmenorrhea, menorrhagia, dyspareunia, chronic pelvic pain) were also documented.

The laparoscopic findings were meticulously documented within the same form.

The diagnosis of endometriosis was primarily based on direct visualization during laparoscopy. The surgical findings were systematically reviewed and classified according to the Revised American Fertility Society (AFS) scoring system, which categorizes endometriosis into four stages of severity:

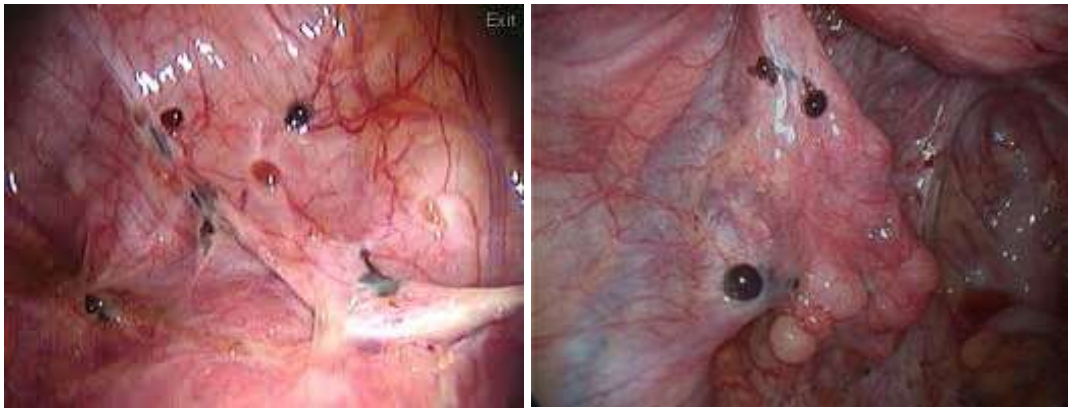
- **Stage I – Minimal**: Presence of a few superficial endometrial implants, typically located in the cul-de-sac.
- **Stage II – Mild**: Endometrial implants affecting one or both ovaries, with limited spread.

- **Stage III – Moderate**: Multiple implants involving several reproductive structures, including one or both ovaries.
- **Stage IV – Severe**: Extensive endometrial implants spread throughout the pelvic cavity, often involving dense adhesions and severe anatomical distortion.

Statistical Analysis:

All data were recorded systematically in a pre-formatted data collection form. Quantitative data was expressed as mean and standard deviation, and qualitative data was expressed as frequency distribution and percentage. The data were analyzed using the chi-square test. A p-value <0.05 was considered significant. Statistical analysis was performed by using SPSS 20 (Statistical Package for Social Sciences) for Windows version 10. This study was ethically approved by the Ethical Review Committee of the Diabetic Association of Bangladesh (BADAS).

Laparoscopic view of endometriosis



A **B**

Figure 1 (A &B): Endometriotic lesions at the peritoneum of the pelvic wall

A **B**

Figure 2 (A &B): Endometriotic cyst – laparoscopic surgery.

RESULTS

Table 1: Baseline characteristics of the study population (N=127)

Baseline characteristics	N	P (%)
Age group in years		
21 – 25	23	18.1
26 – 30	58	45.7
31 – 35	39	30.7
36 – 40	7	5.5
Mean ± SD (years)	29.31± 4.08	
Socioeconomic condition		
Upper	38	29.9
Middle	74	58.3
Lower	15	11.8
Occupational status		

Housewife	102	80.3
Service	24	18.9
Student	1	0.8
BMI (kg/m^2)		
Under weight	6	4.72
Normal	46	36.22
Over weight	44	34.65
Obese	21	16.53
Morbid obese	10	7.87
Type of infertility		
Primary	36	28.35
Secondary	91	71.65
Duration of infertility		
2 - 5 yrs	51	40.2
5 - 10 years	66	52.0
> 10 years	10	7.9
Mean ± SD (years)	6.14±2.7	

This table presents the demographic and clinical baseline characteristics of the study population. The participants had a mean age of 29.31 ± 4.08 years, with the majority (45.7%) falling in the 26–30 age group. Most of our patients belonged to the middle class (58.3%), and a majority of participants were housewives (80.3%). Regarding body mass index (BMI), 36.22% of the women had a normal BMI, 34.65% were overweight, 16.53% were obese, and 7.87% were morbidly obese. A small proportion (4.72%) was underweighted. Out of the total participants, 36 (28.35%) were identified with primary infertility, while 91 (71.65%) had secondary infertility. Most women (52.0%) experienced infertility for 5–10 years, followed by 40.2% with 2–5 years, and 7.9% with over 10 years of infertility. The mean duration of infertility was 6.14 ± 2.7 years.

Table 2: Prevalence and Severity of Endometriosis on Laparoscopy among Study Participants (N=127)

Endometriosis	N	P (%)
Yes	24	18.9
No	103	81.1
Severity of endometriosis		
Minimal endometriosis (Stage I)	9	37.5
Mild endometriosis (Stage II)	4	16.7
Moderate endometriosis (Stage III)	4	16.7
Severe endometriosis (Stage IV)	7	29.2
Total	24	100.0

Table 2 shows that out of the total patients, 24 individuals (18.9%) were diagnosed with endometriosis, while 103 (81.1%) showed no evidence of the condition. Among those with endometriosis (n=24), the severity was categorized according to standard staging: 9 participants (37.5%) had minimal (Stage I) endometriosis, 4 (16.7%) had mild (Stage II), another 4 (16.7%) had moderate (Stage III), and 7 participants (29.2%) had severe (Stage IV) endometriosis.

Table 3: Association of Clinical presentations and laparoscopic staging of endometriosis

Staging of endometriosis	Clinical presentation			
	Dysmenorrhea			
	Mild	Moderate	Severe	p value
Stage I	2 (6.3%)	2 (5.3%)	4 (22.2%)	0.053
Stage II	1 (3.1%)	0	3 (16.7%)	0.004
Stage III	1 (3.1%)	0	1 (5.6%)	0.556
Stage IV	0	4 (10.5%)	3 (16.7%)	0.016
Total	4 (12.5%)	6 (15.8%)	11 (61.2%)	
	Menorrhagia			
Stage I	7 (11.7%)			0.057
Stage II	2 (3.3%)			0.991
Stage III	2 (3.3%)			0.991

Stage IV	7 (11.7%)	0.004
Total	18 (30%)	
	Dyspareunia	
Stage I	8 (32%)	0.085
Stage II	2 (8%)	0.121
Stage III	0	
Stage IV	4 (16%)	0.010
Total	14 (56%)	
	Chronic pelvic pain	
Stage I	6 (27.3%)	0.000
Stage II	3 (13.6%)	0.002
Stage III	1 (4.5%)	0.680
Stage IV	5 (22.7%)	0.000
Total	15 (68.1%)	

Table 3 shows that for dysmenorrhea, the majority of cases (61.2%) were classified as severe, with the highest severity observed in Stage I and Stage II disease. Statistically significant associations were found between dysmenorrhea and Stage II (p = 0.004) and Stage IV (p = 0.016) endometriosis. Menorrhagia was reported in 30% of the patients with endometriosis. The highest number of cases occurred in Stage I and Stage IV (each 11.7%), with a significant association only at Stage IV (p = 0.004). Dyspareunia was observed in 56% of participants, most notably in Stage I (32%) and Stage IV (16%). A statistically significant association was found with Stage IV (p = 0.010). Chronic pelvic pain was the most frequently reported symptom (68.1%), with strong associations across multiple stages: Stage I (27.3%, p = 0.000), Stage II (13.6%, p = 0.002), and Stage IV (22.7%, p = 0.000). Overall, the data shows that significant relationships exist between endometriosis stage and symptom severity.

Table 4: Association of pelvic examination findings with laparoscopic staging of endometriosis

	Pelvic examination	**p-value**
Stage of endometriosis	**Tenderness**	
Stage I	6 (4.7%)	>0.05
Stage II	3 (2.4%)	0.002
Stage III	2 (1.6%)	>0.05
Stage IV	4 (3.1%)	>0.05
Total	15 (11.8%)	
	Nodularity	
Stage I	5 (3.9%)	>0.05
Stage II	1 (0.8%)	>0.05
Stage III	2 (1.6%)	>0.05
Stage IV	2 (1.6%)	>0.05
Total	10 (7.9%)	
	Restricted uterine mobility	
Stage I	5 (4.1%)	>0.05
Stage II	4 (3.1%)	0.004
Stage III	4 (3.1%)	0.004
Stage IV	3 (2.3%)	>0.05
Total	15 (12.6%)	
	Retroverted uterus(fixed)	
Stage I	7 (5.5%)	>0.05
Stage II	3 (2.4%)	0.008
Stage III	2 (1.6%)	>0.05
Stage IV	3 (2.3%)	>0.05
Total	15 (11.8%)	

This table presents the correlation between clinical pelvic examination findings and the stage of endometriosis among patients. Pelvic tenderness was observed in 11.8% of participants, most commonly in Stage I (4.7%) and Stage IV (3.1%). However, a statistically significant association was noted only in Stage II (p = 0.002). Nodularity was present in 7.9% of cases, with the highest incidence in Stage I (3.9%). No significant associations were found across the stages. Restricted uterine mobility was detected in 12.6% of

patients, particularly in Stage I (4.1%), Stage II (3.1%), and Stage III (3.1%). Statistically significant associations were observed for both Stage II and Stage III (p = 0.004 for each). A fixed retroverted uterus was noted in 11.8% of participants, with the highest prevalence in Stage I (5.5%). A significant association was found in Stage II (p = 0.008), while other stages did not show statistically significant correlations.

Table 5: Laparoscopic findings of the patients (N=127)

Laparoscopic findings	N	P (%)
Endometriotic lesion	23	18.1
Chocolate cyst of the ovary	11	8.7
Tubal occlusion	33	26.0
Normal	28	22.0
PCO	47	37.0
Adhesion	32	25.2
POD obliteration	17	13.4

Table 5 shows that a total of 127 infertile women underwent diagnostic laparoscopy as part of their infertility evaluation. Endometriotic lesions were identified in 18.1% of cases, and 8.7% had ovarian chocolate cysts, both findings diagnostic of endometriosis. Additionally, laparoscopy revealed polycystic ovaries (PCO) in 37% of the women, pelvic adhesions in 25.2%, and obliteration of the Pouch of Douglas (POD) in 13.4%. In 22% of cases, no pelvic abnormalities were detected. Tubal patency was assessed using chromopertubation during the procedure, revealing tubal occlusion (either unilateral or bilateral) in 25.9% of the patients.

DISCUSSION

In the present study, the mean age of participants was 29.31 ± 4.08 years. The lower prevalence of endometriosis at the extremes of reproductive age and its higher frequency in women of reproductive age aligns well with findings from previous research [21, 23]. Farquhar CM (2000) and Mishra *et al*. (2015) similarly reported a mean age of 29 ± 4.3 years among women diagnosed with endometriosis, supporting our findings [21, 24]. Generally, endometriosis affects approximately 2.5–3.3% of women of reproductive age, and it has been diagnosed in 20–68% of women undergoing infertility evaluations [25, 26].

In our study, infertility was the primary clinical presentation, with secondary infertility being more common (71.65%). In contrast, Mishra *et al*. (2015) found that 75% of their cases had primary and 25% had secondary infertility [24]. Other studies have shown similar patterns, with the majority of patients presenting with primary infertility [27, 28]. Chronic pelvic pain is another common symptom, and studies have reported that 45–82% of women with chronic pelvic pain and 2.1–78% of infertile women are diagnosed with endometriosis [9, 22]. The incidence of symptoms such as chronic pelvic pain is notably higher among infertile women than in fertile populations [10, 20].

Khawaja *et al*. noted that in addition to infertility, many patients also presented with symptoms such as chronic pelvic pain, dysmenorrhea, menstrual irregularities, and dyspareunia—findings suggestive of endometriosis. This highlights the importance of considering such symptoms when evaluating women for infertility. Interestingly, their study found no significant association between most clinical symptoms or examination findings and the stage of endometriosis, except for thin body habitus and restricted uterine mobility [29].

In our cohort, the overall frequency of endometriosis among infertile women was 18.9%, a finding consistent with the 16.8% reported by Khawaja *et al*. [29] and comparable to several other international studies [21, 23, 30]. However, other studies have reported considerably higher rates. For instance, Meuleman *et al*. found a prevalence of 47% [19,9], Mishra *et al*. (2017) reported 54.98% [31], and Valson *et al*. (2016) noted a remarkably high prevalence of 73.33% [13]. Similarly, Mishra VV et al. (2015) documented a rate of 48.38% [24], while Tsuzi *et al*. observed global estimates reaching up to 63% [32]. These variations may reflect differences in patient populations, diagnostic criteria, or referral patterns.

Our study revealed that the majority of patients with endometriosis were diagnosed at Stage I (37.5%), indicating early-stage disease at the time of presentation. This trend supports the hypothesis that many cases are identified at an early stage, possibly due to early investigation for infertility. It also supports the idea of an inverse relationship between the stage of endometriosis and the severity of symptoms, as proposed by Vercellini *et al*. [33]. Mishra *et al*. (2017) similarly reported that most of their cases were Stage I and asymptomatic, while symptom severity and sonographic detection of endometrioma increased significantly with disease progression [31].

In our findings, severe dysmenorrhea and chronic pelvic pain showed significant associations with Stage II and Stage IV disease ($p < 0.05$), while

menorrhagia and dyspareunia were also linked with more advanced stages. Previous studies from Europe and Western countries have reported a positive association between endometriosis and low BMI [34, 35], although this has not been consistently linked with disease severity. Clinical signs and symptoms of endometriosis can vary widely depending on lesion location and disease burden, and in some cases, may be absent [29]. Our findings contrast with those of Mehmud *et al*. (2007), who reported limited symptom association with staging, though they did not explore correlations with laparoscopic or sonographic findings [19].

Certain clinical signs may increase the suspicion of endometriosis, including nodularity and tenderness in the posterior pelvic compartment, reduced uterine mobility, pelvic masses, and a retroverted fixed uterus. However, these findings are not definitive, and a conclusive diagnosis requires laparoscopy [29].

In our study, clinical findings such as pelvic tenderness, restricted uterine mobility, and a fixed retroverted uterus were more commonly seen in moderate to severe disease stages, with significant associations particularly noted in Stage II. Laparoscopic evaluation also revealed polycystic ovaries in 37% of patients, pelvic adhesions in 25.2%, obliteration of the Pouch of Douglas in 13.4%, and tubal occlusion in 25.9%. No abnormalities were detected in 22% of cases, reinforcing the importance of laparoscopy in uncovering otherwise undetected pathology.

Strong correlations were observed between the laparoscopic stage of endometriosis and findings such as endometriomas, adhesions, and tubal blockages. These results affirm that laparoscopy is the most accurate and definitive method for diagnosing and staging endometriosis, as emphasized by Kennedy *et al.* [14].

Limitations of the study

Our study was a single-center study, so the study population could not be representative of the whole community. We took a small sample size due to the short study period.

CONCLUSION AND RECOMMENDATIONS

In our study, we found a significant correlation between clinical presentation, pelvic examination findings, and laparoscopic staging in infertile women diagnosed with endometriosis. Among the 127 women evaluated, endometriosis was detected in nearly one-fifth, with a range of clinical symptoms and laparoscopic findings reflecting varying disease severity. Chronic pelvic pain and severe dysmenorrhea were particularly associated with higher stages of endometriosis, while clinical signs such as restricted uterine mobility and fixed retroversion also correlated with moderate stages. Laparoscopy proved to be a valuable diagnostic tool, not only for confirming endometriosis but also for identifying other pelvic pathologies such as polycystic ovaries, adhesions, and tubal occlusion.

Further studies using a prospective and longitudinal design, with a larger sample size, need to be completed to validate our study findings.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: This study was ethically approved

REFERENCES

1. Pessoa de Farias Rodrigues M, Lima Vilarino F, de Souza Barbeiro Munhoz A, da Silva Paiva L, de Alcantara Sousa LV, Zaia V, *et al*. Clinical aspects and the quality of life among women with endometriosis and infertility: a cross-sectional study. BMC Women's Health. 2020;20:1–7.
2. Cullen TS. Adenomyoma of the uterus. Philadelphia: W.B. Saunders Co; 1908.
3. Hudelist G, Keckstein J, Wright JT. The migrating adenomyoma: past views on the etiology of adenomyosis and endometriosis. Fertil Steril. 2009;92:1536–43.
4. Sampson JA. Peritoneal endometriosis due to the menstrual dissemination of endometrial tissue into the peritoneal cavity. Am J Obstet Gynecol. 1927;14:422–69.
5. Mahmood TA, Templeton A. Prevalence and genesis of endometriosis. Hum Reprod. 1991;6:544–9.
6. Stilley JA, Birt JA, Sharpe-Timms KL. Cellular and molecular basis for endometriosis-associated infertility. Cell Tissue Res. 2012;349(3):849–62.
7. Practice Committee of the American Society for Reproductive Medicine. Endometriosis and infertility: a committee opinion. Fertil Steril. 2012;98(3):591–8.
8. Mahmood TA, Templeton A. Prevalence and genesis of endometriosis. Hum Reprod. 1991;6:544–9.
9. Meuleman C, Vandenabeele B, Fieuws S, Spiessens C, Timmerman D, D'Hooghe T. High prevalence of endometriosis in infertile women with normal ovulation and normospermic partners. Fertil Steril. 2009;92(1):68–74.
10. Rawson JM. Prevalence of endometriosis in asymptomatic women. J Reprod Med. 1991;36:513–5.
11. Missmer SA, Hankinson SE, Spiegelman D, Barbieri RL, Marshall LM, Hunter DJ. Incidence of laparoscopically confirmed endometriosis by demographic, anthropometric, and lifestyle factors. Am J Epidemiol. 2004;160:784–96.
12. Eskenazi B, Warner ML. Epidemiology of endometriosis. Obstet Gynecol Clin North Am. 1997;24:235–58.

13. Valson H, Kulkarni C, Teli B, Nazer T. Study of endometriosis in women of reproductive age, laparoscopic management and its outcome. Int J Reprod Contracept Obstet Gynecol. 2016;5:514–9.
14. Kennedy S, Bergqvist A, Chapron C, D'Hooghe T, Dunselman G, Greb R, et al. ESHRE guideline for the diagnosis and treatment of endometriosis. Hum Reprod. 2005;20:2698–704.
15. Vercellini P, Fedele L, Aimi G, Pietropaolo G, Consonni D, Crosignani PG. Association between endometriosis stage, lesion type, patient characteristics and severity of pelvic pain symptoms: a multivariate analysis of over 1000 patients. Hum Reprod. 2007;22:266–71.
16. Hornstein MD, Gleason RE, Orav J, Haas ST, Friedman AJ, Rein MS, *et al*. The reproducibility of the revised American Fertility Society classification of endometriosis. Fertil Steril. 1993;59:1015–21.
17. Chapron C, Fritel X, Dubuisson JB. Fertility after laparoscopic management of deep endometriosis infiltrating the uterosacral ligaments. Hum Reprod. 1999;14:329–33.
18. Zafar S, Mahmood G, Haq AN. Burden of gynaecological disease in a tertiary hospital: two years audit of outpatient department at PIMS. J Pak Med Assoc. 2004;54:513–5.
19. Mehmud G, Akhtar T, Sadia S. Endometriosis: frequency and correlation between symptomatology and disease stage. J Coll Physicians Surg Pak. 2007;17:199–202.
20. Louis GMB, Hediger ML, Peterson CM, Croughan M, Sundaram R, Stanford J, et al. Incidence of endometriosis by study population and diagnostic method: the ENDO study. Fertil Steril. 2011;96:360–5.
21. Farquhar CM. Extracts from the "clinical evidence". Endometriosis. BMJ. 2000;320:1449–52.
22. Mahmood TA, Templeton A. Prevalence and genesis of endometriosis. Hum Reprod. 1991;6:544–9.
23. Gruppo Italiano per lo Studio dell'Endometriosi. Prevalence and anatomical distribution of endometriosis in women with selected gynaecological conditions: results from a multicentric Italian study. Hum Reprod. 1994;9:1158–62.
24. Mishra VV, Gaddagi RA, Aggarwal R, Choudhary S, Sharma U, Patel U. Prevalence; characteristics and management of endometriosis amongst infertile women: a one year retrospective study. J Clin Diagn Res. 2015;9(6):QC01.
25. Houston DE, Noller KL, Melton LJ 3rd, Selwyn BJ, Hardy RJ. Incidence of pelvic endometriosis in Rochester, Minnesota, 1970–1979. Am J Epidemiol. 1987;125:959–69.
26. Matorras R, Rodriguez F, Pijoan JI, et al. Epidemiology of endometriosis in infertile women. Fertil Steril. 1995;63:34–8.
27. Gao X, Outley J, Botteman M, Spalding J, Simon JA, Pashos CL. Economic burden of endometriosis. Fertil Steril. 2006;86:1561–72.
28. Preciado Ruiz R, Torres Calleja J, Zuniga Montiel JA, Martinez Chequer JC, Manterola Alvarez D, Garcia Luna A. Incidence of endometriosis in infertile women: clinical and laparoscopic characteristics. Ginecol Obstet Mex. 2005;73:471–6.
29. Khawaja UB, Khawaja AA, Gowani SA, Shoukat S, Ejaz S, Ali FN, et al. Frequency of endometriosis among infertile women and association of clinical signs and symptoms with the laparoscopic staging of endometriosis. J Pak Med Assoc. 2009;59(1):30.
30. Waller KG, Lindsay P, Curtis P, Shaw RW. The prevalence of endometriosis in women with infertile partners. Eur J Obstet Gynecol Reprod Biol. 1993;48:135–9.
31. Mishra VV, Bandwal P, Agarwal R, Aggarwal R. Prevalence, clinical and laparoscopic features of endometriosis among infertile women. J Obstet Gynaecol India. 2017;67:208–12.
32. Tsuji I, Ami K, Miyazaki A, Fujinami N, Hoshiai H. Benefit of diagnostic laparoscopy for patients with unexplained infertility and normal hysterosalpingography findings. Tohoku J Exp Med. 2009;219:39–42.
33. Vercellini P, Trespidi L, De Giorgi O, Cortesi I, Parazzini F, Crosignani PG. Endometriosis and pelvic pain: relation to disease stage and localization. Fertil Steril. 1996;65:299–304.
34. Ferrero S, Anserini P, Remorgida V, Ragni N. Body mass index in endometriosis. Eur J Obstet Gynecol Reprod Biol. 2005;121:94–8.
35. Hediger ML, Hartnett HJ, Louis GMB. Association of endometriosis with body size and figure. Fertil Steril. 2005;84:1366–74.