Evaluation of Endometriosis Risk Factors and Clinical Treatments in Bangladesh: A Cross-sectional Study.

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Abstract

Background: Endometriosis is a gynecological condition that involves the implantation of endometrial tissue outside the uterine cavity. About 1.2 million women are suffering from this disease in Bangladesh.

Objective: The purpose of this study was to explore the risk factors, symptoms, and clinical treatment in Bangladesh

Methods: In this cross-sectional study, out of 162 infertile women 82 had endometriosis confirmed with laparoscopy and 80 were included in the control group. All were asked to fill out a questionnaire containing demographics, reproductive, and menstrual status. Comparisons between the two groups were done using an Independent T-test, Chi-square test, and logistic regression model.

Results: The prevalence of endometriosis was higher with, age, marital status, and BMI ($P < 0.05$). The most common symptoms were dysmenorrhea, excessive bleeding, cramping etc. Infertility (OR:2.21; %95CI: 1.07–4.53; P = 0.03), thyroid imbalance (OR:3.44; %95CI: 1.47–8.03; P = 0.004), irregular menstruation (OR:5.76; %95CI: 2.12–15.60; P = 0.001), age at menarche (OR:2.54; %95CI: 1.04–6.21; P = 0.04) and abortion (OR:2.75; %95CI: 1.31–5.74; P = 0.007) were associated with endometriosis risk. Endometriosis was diagnosed most frequently by TVS (transvaginal ultrasound) at 41.1%, NSAI (nonsteroidal aromatase inhibitors) at 22.8% was the most commonly utilized medicine, and 13.6% of patients undergo laparoscopy.

Conclusions: Endometriosis is a considerable public health issue because it affects many women and is associated with significant morbidity. In this study, we developed a model that can be used to predict the risk of endometriosis in infertile women in Bangladesh Clinical Trial: BRAC university Institutional Review Board (IRB) under the IRB number BRACUIRB_220240006

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Abstract

Introduction: Endometriosis is a gynecological condition that involves the implantation of endometrial tissue outside the uterine cavity. About 1.2 million women are suffering from this disease in Bangladesh. The purpose of this study was to explore the risk factors, symptoms, and clinical treatment in Bangladesh.

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Conclusion: Endometriosis is a considerable public health issue because it affects many women and is associated with significant morbidity. In this study, we developed a model that can be used to predict the risk of endometriosis in infertile women in Bangladesh.

Keywords: Endometriosis, Infertility, Laparoscopy, Abortion, Bangladesh.

Introduction

Endometriosis is a gynecological condition that involves the implantation of endometrial tissue outside the uterine cavity [1]. The prevalence of endometriosis is 10%–15% of all women of reproductive age and symptoms include, chronic pelvic pain, dysmenorrhea, and alterations in menstrual cycles [2,3]. Endometriosis is commonly associated with infertility. This is one of the leading causes of female infertility [4].

In addition to these challenges, women afflicted by endometriosis frequently experience lower health-related quality of life compared to those without the condition [5,6]. The lack of sufficient information about endometriosis often leads to misconceptions and stigmatization of women.

These factors can significantly contribute to the likelihood of experiencing higher levels of stress and depressive symptoms among affected women [7,8]. Impacting sexual functioning, self-confidence, and the couple's relationship has been observed in women suffering from endometriosis [9,10].

There is no reliable serum maker for this disease, and imaging is still a diagnostic dilemma. Unfortunately, in the case of deep infiltrating endometriosis (DIE), uterosacral ligaments, rectovaginal septum, vagina, and bladder, there are controversies in diagnosis even with good transvaginal ultrasound [11]. High-resolution magnetic resonance imaging (MRI) with bladder, vaginal, and rectal contrast has been a breakthrough in recent times.

There is a diagnostic delay of endometriosis all over the world. The typical duration between the onset of pain and diagnosis of endometriosis is over 8 years in the UK and 12 years in the USA, earning it the moniker "the missed disease" [12]. Furthermore, 25-50% of infertile women have endometriosis, while 30-50% of women with endometriosis are infertile [13].

Endometriosis is also a widespread health issue among women of reproductive age in Bangladesh, as it is in various regions of the world. The Endometriosis and Adenomyosis Society of Bangladesh estimates that there are approximately 1.2 million endometriosis patients in Bangladesh [14].

There is a scarcity of research on endometriosis in Bangladeshi women. Lack of knowledge and understanding of this disease many women suffer pain throughout their life without any medical help.

With this background, this study aims to understand the risk factors, clinical symptoms, and clinical treatment in Bangladesh. This study will help to pave the way to create awareness among women diagnosed with Endometriosis. Also, it will shed light on the millions of women who are afraid to attend hospitals because they are too embarrassed to talk about it.

Methods

The study was conducted as a cross-sectional study between February 2023 and May 2024 on 162 infertile women (82 women with endometriosis and 80 Controls) in BIRDEM Women and Children Hospital in Dhaka, Bangladesh. The inclusion criteria of the study were reproductive-age women from 15-45 years, diagnosed with endometriosis by clinical presentation and confirmed by ultrasonography/ laparoscopy, and a control group consisting of 80 inertial women with normal pelvic ultrasound. A control group was selected at the same time as the case group. Controls were selected randomly and matched on age, education, and duration of infertility. Ethical approval for the study was secured from the BRAC university Institutional Review Board (IRB) under the IRB number BRACUIRB_220240006. Patients and/or their legal guardians gave consent to publication and participate in the study (in the case of minors). They were given a thorough background on the research and its purpose. The responders' names were also concealed.

During this study, a structured questionnaire was applied to collect information. The weight and height of all participants in the clinic are measured. A socio-demographic checklist including questions about socioeconomic status (such as age, educational level, occupational status, income, and habitation) was completed. The following, questions were asked about menstrual and reproductive characteristics (such as menstrual pattern, cycle regularity, menstrual duration, amount of menstrual bleeding, length of the menstrual cycle, menarche age, presence of dysmenorrhea, dyspareunia and pelvic pain, low back pain, dyscheazia, history of using contraception).

Data were analyzed using SPSS for Windows (version 26; SPSS Inc., Chicago, IL, USA). All categorical variables were summarized as counts and percentages. Comparisons between the two groups were done using Independent T-test, Chi-square test, and Fisher's exact and logistic regression model. P-value < 0.05 was considered statistically significant.

Result

Considering demographic and lifestyle characteristics, age ($p = 0.001$), marital status ($p = 0.05$), BMI ($p = 0.00$), dysmenorrhea ($p = 0.00$), excessive bleeding ($p = 0.008$), cramping ($p = 0.01$), low back pain ($p = 0.01$), pelvic pain ($p = 0.01$), dysuria ($p = 0.001$), and dyscheazia ($p = 0.02$) were all linked to endometriosis prevalence. There was no significant association between education, occupation,

dysuria, family infertility history, and the prevalence of endometriosis (P > 0.05) (Table 1).

Table 1:

Character	Case (n = 82)	Controls (n = 80)	P value
Age			0.001*
15-25	49(30.2)	26(16.0)	
26-35	23(14.2)	35(21.6)	
36-45	8(4.9)	14(8.6)	
46-50	2 (1.2)	5(3.1)	
Education			0.45
Primary	3(1.9)	5(3.1)	
Secondary	12(7.4)	16(9.9)	
Higher Secondary	16(9.9)	18(11.1)	
Graduate	37(22.8)	34(21.0)	
Post Graduate	14(8.6)	7(4.3)	
Marital status			0.05*
Married	54(33.3)	68(42.0)	
Unmarried	28(17.3)	12(7.4)	
Occupation			0.16
House wife	34(21.0)	50(30.9)	
Service holder	26(16.0)	20(12.3)	
Student	22(13.6)	10(6.2)	
BMI			0.00*
Underweight	10(6.2)	10(6.2)	
Normal	12(7.4)	50(30.9)	
Overweight	52(32.1)	14(8.6)	
Obese	8(4.9)	6(3.7)	
Dysmenorrhea	68(42.0)	34(21.0)	0.00*
Excessive Bleeding	69(42.6)	53(32.7)	0.008*
Cramping	52(32.1)	35(21.6)	0.01*
Low back pain	59(35.4)	43(26.5)	0.01*
Pelvic pain	60(37.0)	43(26.5)	0.01*
Dysuria	44(27.2)	23(14.2)	0.001*
Dyscheazia	35(29.0)	21(13.0)	0.02*
Dyspareunia	33(20.4)	34(21.0)	0.77
Family Infertility History	20(12.3)	13(8.0)	0.19
Data are demonstrated as n (%) or mean ± SD, BMI Body mass index *p value ≤ 0.05			

Demographic lifestyle and characteristics of endometriosis cases and control women

Table 2 indicates the risk factors in women with endometriosis, infertility (OR:2.21; %95CI: 1.07–4.53; P = 0.03), thyroid imbalance (OR:3.44; %95CI: 1.47–8.03; P = 0.004), irregular menstruation (OR:5.76; %95CI: 2.12–15.60; P = 0.001), age at menarche (OR:2.54; %95CI: 1.04–6.21; P = 0.04) and abortion (OR:2.75; %95CI: 1.31–5.74; P = 0.007) were associated with endometriosis risk. There was no significant relationship between contraceptive and endometriosis risk (P > 0.05).

Table 2: Association of risk factors of endometriosis cases and control women

Characteristic	Cases (n = 82)	Controls (n = 80)	P value	OR	95% C.I.	
					Lower	Upper
Infertility Yes No	56(34.6) 26(16.0)	30(18.5) 50(30.9)	.030	2.212	1.079	4.535
Contraceptive Yes No	6(3.7) 76(46.9)	8(4.9) 72(44.4)	.738	.802	.221	2.911
Thyroid Imbalance			.004	3.441	1.473	8.034

Yes No	33(20.4) 49(30.2)	19(9.9) 64(39.5)				
Irregular Menstrual Yes No	73(45.1) 9(5.6)	54(33.3) 26(16.0)	.001	5.763	2.128	15.602
Age at menarche Less than 11 More than 12	14(8.6) 68(42.0)	23(14.2) 57(35.2)	.040	2.546	1.042	6.219
Abortion Yes No	51(31.5) 31(19.1)	35(21.6) 45(27.8)	.007	2.750	1.317	5.744

Table 3 indicates the treatment frequency of endometriosis women, those who were diagnosed by TVS 45.1% and CA-125 (5.6%). As a treatment modality, 37% were stimulated with Aromatase inhibitors as part of infertility treatment (3rd generation Aromatase inhibitors, letrozole), 10% GnRH (gonadotropin-releasing hormone), 18% NSAID (nonsteroidal anti-inflammatory medications), and 17% estrogen-progestogen combinations were recommended. 37% of women with endometriosis did not undergo any surgical interventions and 13.6% underwent laparoscopy as a surgical intervention. It has been observed from this study that in 42% of women suffering from endometriosis with pain, their quality of life has deteriorated (data not shown).

Table 3: Treatment frequency of endometriosis cases and control women

Characteristic	Cases (n = 82)	Controls (n = 80)
Diagnosis		
TVS	73(45.1)	64(39.5)
CA-125	9(5.6)	16(9.9)
Medication		
NSAI	37(22.8)	28(17.3)
GnRH	10(6.2)	13(8.0)
NSAID	18(11.1)	22(13.6)
Estrogen–progestogen combinations	17(10.5)	17(10.5)

Surgical Treatment No surgery Laparoscopy	 60(37.0) 22(13.6)	 60(37.0) 14(8.6)
Data are demonstrated as n (%), NSAI nonsteroidal aromatase inhibitor, NSAID Non-steroidal anti-inflammatory drugs, IUI Intrauterine insemination		

Discussion

The current study was designed to understand the prevalence of endometriosis between women with and without endometriosis. The main finding of the current study showed that there is an association between age, marital status, BMI, and endometriosis. The prevalence of endometriosis was higher between the ages of 15 to 25 (49%). In consistence with our results, a study showed that married women were more likely to experience endometriosis and it is more prevalent among younger, more sexually active women than among older and less sexually active women. Patient weight plays an important role in the development of endometriosis. Another study demonstrated that Women who were overweight had a higher risk of clinically suspected endometriosis than women of normal weight without endometriosis [15,16]. Dysmenorrhea, excessive bleeding, cramping, low back pain, pelvic pain, dysuria, and dyscheazia were the most common symptoms in endometriosis women. Another study found that dysmenorrhea, dyspareunia, dyschezia, and dysuria were the symptoms that endometriosis patients often present [17].

Our study revealed that infertility, thyroid imbalance, irregular menstruation, age at menarche, and abortion were associated with endometriosis risk. A prior study found that endometriosis had a significant connection with infertility [18]. Endometriosis patients have a higher chance of thyroid dysfunction. A study demonstrated that RNA molecules and proteins involved in thyroid metabolism were altered in people with endometriosis. These affect endometriotic cells, T4 production was increased and T3 was reduced [19]. Women who had irregular menstrual periods had a lower risk of developing the condition of endometriosis [20], but This study reported an inverse result, so irregular menstruation may be a risk factor for endometriosis. In consistence with our results, several observational studies and a meta-analysis have found some evidence that early menarche increases the incidence of endometriosis [21].

The majority of patients were diagnosed with TVS (transvaginal ultrasound), suggesting that TVS could be a viable alternative to laparoscopy as a first-line diagnostic tool. According to a Mata analysis study, TVS should continue to be the main instrument for evaluating endometriosis patients [22]. NSAI (nonsteroidal aromatase inhibitors) are a potential therapeutic option for women affected by endometriosis, it is improving endometriosis-related pain symptoms [23]. According to the findings of this study, the majority of patients received NSAI treatment which acts both as ovulation-inducing agents for infertility treatment and on pain management. The surgical treatment frequency was relatively low; the majority of the patients did not get any surgical treatment. This study demonstrated that only 13.6 of patients with endometriosis underwent laparoscopy. To our knowledge, this survey is the first research that shows original data on endometriosis risk factors and clinical treatment. The use of validated questionnaires and confirmed diagnosis through ultrasound/laparoscopy are other strengths of this study. Despite the strengths of the study, some limitations should be noted, First The research data are insufficient to depict a global scenario.

Conclusion

Ensuring reproductive health is crucial for women worldwide, but particularly challenging in low- and middle-income countries like Bangladesh. Most Bangladeshi women have menstrual

discomfort, but due to a lack of information, many do not address it or consider it a sickness. women are uninformed of the treatment for endometriosis, and the condition spreads to the next generation, causing infertility. Therefore, counseling and awareness about reproductive health in women is recommended.

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