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Anxiety And Endometriosis Associated Chronic Pelvic Pain (Cpp): Assessing The Consequences On The Overall Wellbeing - A Women Centric Study

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Abstract: Anxiety is a feeling of worry, nervousness, or unease, often about something that is going to happen in the future. And it can be associated with several issues of human beings viz., personal, professional or health issues. Certain medical conditions, including heart problems, diabetes, thyroid issues, respiratory disorders, and neurological conditions, can cause or exacerbate anxiety symptoms. Apart from these, gynecological issues also playing a major role in the occurrence of anxiety among women. Gyna ecological issues such as infertility, PCOD, endometriosis, hormonal imbalances, etc are the major problems associated with anxiety in women. Anxiety in endometriosis patients can be associated with the chronic pelvic pain (CPP) it causes which can affect well-being of a woman both personal and professional. Hence, the current study aims to understand the link between anxiety and chronic pelvic pain associated with endometriosis through surveys. Outcome of the study indicates that the anxiety levels are significantly high in the endometriosis patients when compared to the control group which is negatively affecting their wellbeing and career. These results form a scientific basis for designing and developing endometriosis specific counselling methods/therapies to manage the anxiety symptoms and providing a stress-free life for the endometriosis warriors.

Index Terms – Anxiety, Endometriosis, Chronic Pelvic Pain.

I. INTRODUCTION

Endometriosis is a painful gynecological condition where endometrium also grows outside to the uterus on areas like Fallopian tubes, uterosacral ligaments, Lining of the pelvic cavity, Ovaries, Outside surface of the uterus, Space between the uterus and the rectum, Bladder, Cervix, Intestines, Rectum, Stomach (abdomen), Vagina or vulva, abdomen lining, lungs, heart and brain. Similar to the endometrium inside the uterus, outside endometrium also grows and sheds monthly. As there will be no way out for this tissue, these tissues will fall inside the abdominal/pelvic cavity and causes inflammations, scar tissues and adhesions. In some cases, blood filled sacs on the ovaries which are called as chocolate cysts can also be found on ovaries. There is no permanent cure for endometriosis except for the management of symptoms.

The major symptom of Endometriosis is abdominal pain/cramps which likely starts 2-5 days before menstruation and will last till 2-5 days after the menstruation. And in some cases, it can last for 365 days of the year irrespective of the mesntruation. Other symptoms will include, lower back pain, pain during passing stools and urination during menstruation, pain during sexual intercourse, heavy or irregular periods, spotting in between the periods, fatigue. And in some cases, diarrhea, nausea can occur during menstruation. It can also cause infertility and also miscarriages in few cases. These symptoms vary greatly from individual to individual but most common symptom that occurs is pain which can turn into the chronic pain. During the

time course, individuals with endometriosis will face anxiety issues making their mental life vulnerable which needs an attention. Anxiety is a prevalent and debilitating comorbidity in individuals with endometriosis. Addressing both the physical and psychological aspects of the condition through comprehensive, multidisciplinary care is essential. Future research should focus on refining therapeutic approaches and investigating the long-term outcomes of combined psychological and medical interventions. Most of medications used to treat these conditions also alters the mental well-being of the endometriosis patients. This is more bothersome to the woman who is a working professional as she has to cater to the demands/needs of the organizations with specified timelines failure to which can alleviate the anxiety symptoms. Hence, current study aims at understanding the anxiety faced by the endometriosis patients through surveys and interviews. Current study includes the comparative assessment of endometriosis patients' v/s control group who don't have endometriosis to understand the link between their endometriosis pain and anxiety and how these issues are affecting their wellbeing. Results of the study will give leads to the development of endometriosis associated anxiety counselling methods, management strategies, identification and analysis of novel plant based natural molecules, identification of new therapeutics, etc.

II. RESEARCH METHODOLOGY

2.1. Survey of hospitals to identify and select the target population: Different hospitals were surveyed in Bangalore and selected the candidates suffering with endometriosis of several types and stages.

2.2. Assessment of Endometriosis and Wellbeing: 100 endometriosis patients and 100 control subjects who doesn't have endometriosis were selected for the assessment. They were provided with the questionnaires and asked to fill them as per their experience. Care was given to select the working professionals either working now or worked earlier.

Lifestyle questionnaire suitable for the current work objectives was made carefully by including all the necessary aspects. Along with that, data on BMI, age, age of the subject when they got first periods (Menarche), Marital status, Children and infertility issues and family history of having endometriosis was collected.

2.3. Assessment of Pain: McGill's pain questionnaire was used to assess the pain levels in the endometriotic patients.

2.4. Assessment of Anxiety: Hamilton Anxiety Rating Scale (HAM-A) was adopted to assess the anxiety levels in the subjects suffering with endometriosis related pain.

2.5. Qualitative and Quantitative analysis, statistical data analysis: All data were assessed quantitatively. The datasets were compared with their respective control group data using the Student's *t-test* to determine statistical significance. Correlation tests were performed to assess the associations between pain levels, anxiety levels, and overall well-being.

III. RESULTS AND DISCUSSION

Endometriosis is one of the most important causes of chronic pelvic pain (CPP); women with endometriosis suffer from a wide range of pelvic pain such as dysmenorrhea, dyspareunia, non-menstrual (chronic) pelvic pain, pain at ovulation, dyschezia and dysuria. Several studies have underlined the influence of CPP on quality of life and psychological well-being of women with endometriosis. Data suggest that the experience of pelvic pain is an important component of endometriosis and may significantly affect emotive functioning of affected women. A strong association was reported between higher rates of depression and anxiety symptoms and endometriosis-associated pain (i.e., chronic pelvic pain, dysmenorrhea, dyspareunia, or painful defecation) and pain-related comorbidities (Cavaggioni et al., 2014; Estes et al., 2021; Lorençatto et al., 2016; Sullivan-Myers et al., 2023). the use of oral contraceptives was associated with a low risk of anxiety (Estes et al., 2021). And it can cause several issues which can hinder the lifestyle of the individuals.

3.1. BMI

Table 1: BMI values of the subjects considered for the current study

S. No.	BMI	Endometriosis patients (%)	Control (%)
1	Underweight (Below 18.5)	00*	05
2	Healthy (18.5 – 24.9)	10***	75
3	Overweight (25.0 – 29.9)	70***	15
4	Obesity (30.0 or above)	20***	5

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

As per the results, there is a significant variation between the BMI of the control group and the endometriosis patients. Majority of the control group falls under healthy criteria whereas, the endometriosis patients are falling under the Overweight and Obesity criteria).

3.2. Age group

Table 2: Age groups of the subjects considered for the current study

S. No.	Age	Endometriosis patients (%)	Control (%)
1	11-20	00	00
2	21-30	05	08
3	31-40	60	57
4	41-50	30	31
5	51-60	05	04
6	61-70	00	00

While choosing the candidates, care was taken to match the age groups of both the control groups and the endometriotic patients for the better comparison.

3.3. Menarche age

Table 3: Age at the time of Menarche (first period occurrence) of the subjects considered for the current study

S. No.	Menarche Age	Endometriosis patients (%)	Control (%)
1	11-12	05**	00
2	13-14	65***	80
3	15-16	30**	20
4	17-18	00NS	00
5	19-20	00NS	00

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

When the age of menarche was examined, significant differences were observed between the control and disease groups. However, the ages between 13 and 14 years showed the highest percentage of occurrence for menarche in both groups.

3.4. Marital status

Table 4: Marital status of the subjects considered for the current study

S. No.	Marital Status	Endometriosis patients (%)	Control (%)
1	Unmarried	10**	18
2	Married	60NS	62
3	Widowed	10**	00
4	Separated	05**	10
5	Divorced	15**	10

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

When the marital status was assessed, significant differences were observed between the control and endometriosis groups.

3.5. Children & Infertility issues

Table 5: Children & Infertility issues of the subjects considered for the current study

S. No.	Children	Endometriosis patients (%)	Control (%)
1	Yes	30***	55
2	No	35**	25
3	Not conceived at all	05NS	10
4	Miscarriages	20***	05
5	Birth of dead foetus	02NS	01
6	Birth defects	02NS	02
7	Delivery Complications	02NS	01

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

When the number of children and fertility issues were examined, significant differences were observed between the test groups. The control group had more children compared to the endometriosis group ($p \leq 0.001$). Additionally, miscarriages were more among patients with endometriosis compared to the control group ($p \leq 0.001$).

3.6. Family history of endometriosis

Table 6: Family history of endometriosis of the subjects considered for the current study

S. No.	Children	Endometriosis patients (%)	Control (%)
1	Present	05***	01
2	Not present	20***	05
3	Unknown	75**	95

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

3.7. General physical and mental health wellbeing:

Averaged scoring of all the subjects for the different physical and mental health issues faced are tabulated below:

Table 7: General physical and mental health wellbeing of the subjects considered for the current study

S. No.	Aspect	Endometriosis patients' response	Control group response
1	Anger issues	7**	2
2	Appetite loss	5*	1
3	Body aches	9**	2
4	Brain fog	6*	2
5	Confusion	6*	1
6	Fatigue	9**	3
7	Headaches	8**	1
8	Indecisiveness	6**	1
9	Irritability	7*	2
10	Mood swings	8**	2

#Highest score is 10 and the lowest score is 0; subjects experience in the past two months

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

According the responses, it is indicative that the pain has significant effect on different aspects of the daily life. Among the aspects assessed, Body aches and Fatigues are major aspect effecting their daily life following headaches, mood swings, anger issues, irritability, brain fog, confusion, indecisiveness, appetite changes during their pain episodes. Chandel et al. (2023) reported that women's inability to cope with pain makes them irritable, short-tempered, and even depressed and anxious. Furthermore, they feel lonely and are hesitant to tell others about their experiences because they believe they are not always believed. Few studies indicated that higher rates of depression and anxiety can be associated with fatigue in endometriosis patients (Estes et al., 2021; Škegro et al., 2021).

3.8. Effects of endometriotic pain on career related aspects:

Averaged scoring of all the subjects for the difficulties faced to continue their careers are tabulated below:

Table 8: Effects of endometriotic pain on career related aspects of the subjects considered for the current study

S. No.	Aspect	Endometriosis patients' response	Control group response
1	Difficulty in commuting	7**	2
2	Difficulty to be present physically everyday	8**	1
3	Difficulty to complete the assigned tasks on time	7**	2
4	Difficulty in attending the meetings other than the office	8**	1
5	Difficulty to attend official trips and tours	9**	2
6	Difficulty to maintain the same tempo with colleagues all the time	7**	1
7	Difficulty to manage the work load patiently	8**	1
8	Difficulty to accept the criticisms by colleagues/higher authorities	8**	1
9	Difficulty to accept the failures	6**	1
10	Willingness to Work From Home (WFH)	10**	1

#Highest score is 10 and the lowest score is 0; subjects experience in the past one year

(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

Based on the results, it is indicative that the subjects are facing high issues in continuing their professional lives while having the endometriotic pain. Endometriotic pain is coming on the way of their development and promotions, etc. All of the subjects assessed showed willingness to opt for the work from home at least during the pain episodes.

3.9. Effect of Endometriosis and it's pain on the growth and developmental aspects of career:
Averaged scoring of all the subjects on growth and development of career is tabulated below:

Table 9: Effect of Endometriosis and it's pain on the growth and developmental aspects of career of the subjects considered for the current study

S. No.	Aspect	Endometriosis patients (%)	Control (%)
1	Faced demotions	25***	05
2	Could not promoted	65***	10
3	Not opted new jobs/new roles	80***	05
4	Lost several opportunities as you could not physically present for the interviews due to pain	85***	10
5	Lost several opportunities as you could not present properly during the interview due to pain	70**	08

#Yes or no questions, subjects experience during their entire career
(indicate p≤0.05; ** indicate p≤0.01; *** indicate p≤0.001, NS indicate not significant)*

Based on the results, it is indicative that the endometriotic pain is coming in the way for career enhancement.

3.10. Pain levels:

Table 10: Levels of pain being experienced by the subjects considered for the current study

S. No.	Pains levels as per McGill's Pain Inventory	Endometriosis patients (%)	Control (%)
1	65-78	95***	00
2	55-64	05*	00
3	45-54	00NS	00
4	35-44	00NS	00
5	25-34	00**	10
6	15-24	00***	30
7	05-14	00***	60

According to the McGill's pain inventory, 78 is the highest score for the pain and the 0 is the lowest higher and higher the score higher the pain. When analysed the results of the McGill's pain inventory of the subjects suffering with endometriotic pain, most of the subjects scored their pain to be above 65, highest score was 77. Based on the results, it is understood that the pain is real and high in the severity.

3.11. Anxiety levels:
According to the Hamilton Anxiety Rating Scale (HAM-A), Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where,
Minimal or No Anxiety (0–7): Scores in this range suggest that anxiety levels are minimal or insignificant and typically do not require clinical intervention.
Mild Anxiety (8–17): A score within this range indicates the presence of mild anxiety symptoms that may warrant further evaluation or ongoing monitoring through a comprehensive mental health assessment.
Moderate Anxiety (18–24): Scores in this bracket reflect a moderate level of anxiety that is likely to affect daily functioning. Individuals in this range may benefit from therapeutic interventions such as psychotherapy, lifestyle modifications, or, if necessary, medication.
Severe Anxiety (25–56): A score in this range indicates a high level of anxiety that can significantly impair quality of life and daily functioning. Immediate clinical intervention is recommended, which may include a combination of psychotherapy and pharmacological treatment.

Table 11: Anxiety levels of the subjects considered for the current study

S. No.	Anxiety levels as per HAM-A	Endometriosis patients (%)	Control (%)
1	0-7	00***	78
2	8-17	02**	18
3	18-24	18**	4
4	25-56	81***	00

As per the results, subjects with the endometriosis are suffering with the moderate to severe anxiety whereas, the control group is suffering with minimal to mild anxiety. The comparison between anxiety levels of endometriosis patients and the control group have significant variations viz., endometriosis patients have high levels of anxiety when compared to the control group ($p \leq 0.01$). Women with endometriosis are more likely to experience anxiety symptoms compared to the general population, with studies showing a range of 10% to 87.5% experiencing anxiety, potentially due to chronic pain and other factors. Research consistently demonstrates a high prevalence of anxiety in individuals with endometriosis. A study by Facchin et al. (2015) also reported that women with endometriosis are more likely to experience moderate to severe anxiety compared to the general population. The chronic pain and unpredictability of symptoms contribute to elevated anxiety levels, impacting quality of life and overall well-being. Studies suggest that approximately 30-60% of women with endometriosis report symptoms of anxiety, often attributed to chronic pain, hormonal imbalances, and reduced quality of life (Facchin et al., 2015; Sepulcri & Amaral, 2009).

3.12. Effect of association between Pain and Anxiety on wellbeing:

Based on the correlation tests, it was found that anxiety is positively correlated ($p \leq 0.01$) with pain levels, indicating that higher pain is associated with higher anxiety, while lower pain corresponds to lower anxiety. The other well-being parameters are negatively correlated ($p \leq 0.001$) with anxiety, suggesting that anxiety negatively ($p \leq 0.01$) affects the well-being of individuals suffering from endometriosis compared to the control group. These negative effects of anxiety can be attributed to the pain associated with endometriosis. Ribeiro et al. (2021) has reported that 77.1% of patients exhibited anxiety and depression simultaneously, indicating a high rate of comorbidity in women with endometriosis. In addition, it was reported that patients with endometriosis had an increased risk of developing clinically recognized depression and anxiety compared with women never diagnosed with endometriosis (Szypłowska et al., 2023). It has been demonstrated that high levels of anxiety and depression can amplify the severity of pain. (Lagana et al., 2017). A study including a total of 8276 women with endometriosis and 194000 female controls stated that endometriosis was associated with increased odds of depression. These associations were supported by consistent genetic correlations. The genetic liabilities to depression and anxiety were associated with increased odds of endometriosis (Koller et al., 2023).

3.13. Conclusion:

Based on the findings of the current study, it is evident that patients with endometriosis experience higher levels of anxiety compared to women in the general population. This heightened anxiety can adversely affect their overall well-being, work performance, and social life. Therefore, there is a significant need for comprehensive psychological assessment of endometriosis patients and for providing them with specialized, personalized therapies and counselling to help them cope with these challenges and lead a better quality of life. There is also a need to develop personalized therapies and counselling approaches for these patients, taking into account the multiple physical and psychological issues they experience alongside anxiety.

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