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The Impact of Endometriosis on Mental Health - A Literature Review of Depression and Anxiety Symptoms

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Abstract

Introduction and purpose: Endometriosis is a gynecological disease that affects about 10% of women worldwide. Women suffering from endometriosis are susceptible to mental health disorders, such as depression and anxiety. It is essential to highlight the psychological struggles of women with endometriosis in order to integrate physical and psychological care and subsequently enhance the treatment outcomes.
Materials and Methods: Medical databases such as Pubmed, Embase, Google Scholar were searched for scientific papers on endometriosis and its relationship with the symptoms of depression and anxiety. Research outlined the influence of endometriosis treatment, social stigmatization and non-medicinal approach.

State of knowledge: The prevalence of depression and anxiety among women with endometriosis is significant. The symptoms of the disease influence daily struggles, relationship with partners and family, education and career responsibilities, subsequently lowering the quality of life. Women with endometriosis experience social stigmatization manifested not only from society members but also from healthcare professionals. The approach to the medical treatment by patients was discovered to be of consequence. Literature review emphasizes the benefits of psychological support and empathetic attitude of medical practitioners.

Conclusions: Multidisciplinary team is essential in order to provide intervention strategies leading to greater therapeutic outcomes in endometriosis treatment. Endometriosis and mental disorders are inextricably connected. More research is needed to accent the importance of mental health in the treatment of physical conditions.

Keywords: Endometriosis, Depression, Anxiety, Psychology

I INTRODUCTION AND PURPOSE

The pain and uncertainty associated with endometriosis often lead to a hidden epidemic of depression and anxiety among women significantly impacting their quality of life [1].

Endometriosis is a clinical condition that is caused by the growth of endometrial-like tissue as well as glands and stroma, outside of the uterine cavity [2]. This chronic, inflammatory and estrogen-dependent disease causes many clinical symptoms such as chronic pelvic pain, dysmenorrhea, dyspareunia, infertility that have negative impact on patients' physical and emotional well being as well as quality of life [2, 3].

Kotowska and Urbaniak examined the population of 3319 of women in Poland and concluded that 9,9% of them were diagnosed with endometriosis, which is compatible with other studies [4, 5, 6, 7]. This disease occurs to be clinically problematic to diagnose, as the mean time between the onset of symptoms and definite diagnosis was established to be 5.7 years [7]. This fact, as well the symptoms of the disease have a huge impact on the mental health of the patients.

The diagnosis of endometriosis can be exceptionally difficult as the main symptom is dysmenorrhea and pelvic pain, which is very common and affects 50-90% of adolescents [8]. The key is to distinguish between primary and secondary causes of dysmenorrhea. This is quite important as endometriosis is the main common cause of secondary dysmenorrhea in adolescents [8, 9]. Laparoscopy is nowadays a gold standard for diagnosis of endometriosis. However, this invasive procedure may result in prolonged delay between symptoms onset, diagnosis and subsequent treatment. Less invasive methods could shorten the time of diagnosis such as transvaginal ultrasound or magnetic resonance imaging [10, 11].

Many recent studies confirm that endometriosis can disturb mental health, as the symptoms of depression and anxiety occur to be more common in women suffering from endometriosis compared to women without this disease [6, 12, 13]. There are numerous psychological symptoms these women struggle with including fatigue, insomnia and occupational stress, all of which affect the quality of life [14].

Despite wide treatment of endometriosis, 50% of women experience pain that is negatively associated with almost all aspects of daily life such as standing, walking, sleep, sport activities, domestic responsibilities, sexuality, joy of life and more [15]. These daily challenges often have a negative impact on their educational goals, making career decisions, building stable and meaningful relationships, or starting a family, all of which alter one’s life trajectory [16].

What is also important to emphasise is the fact that psychological support may influence symptoms of depression and anxiety, subsequently improving endometriosis-related physical symptoms. It goes to show what role does mental health play in treating a physical condition. [17, 18, 19].

This review aims to explore the relationship between endometriosis and mental health, with a particular focus on the prevalence and severity of depression and anxiety symptoms as well as the quality of life in women with endometriosis. By analysing the current research, t
he paper seeks to highlight the psychological burdens associated with endometriosis, the treatment challenges, and the potential benefits of integrated physical and psychological care in improving patients' quality of life and disease outcomes.

II STATE OF KNOWLEDGE

2.1. Connection Between Endometriosis and Mental Health Symptoms

Women with endometriosis struggle with many physical symptoms that influence the quality of life. Chronic pelvic pain, dyspareunia, back pain, bowel and bladder problems and infertility are all symptoms that affect individuals' well-being, as well as their work productivity, social life and relationship with significant others, causing large amounts of psychological and emotional distress [20]. Although association of stress and endometriosis is not clear, a recent study demonstrated in controllable conditions that stress increases inflammatory reaction of animal models along with severity and size of the lesions, which further intensify the pain [21]. Furthermore, stress stimulates the formation of ectopic endometrial lesions and enhances the manifestation of inflammatory cells to the peritoneal cavity, as it was examined using animal models of endometriosis. It also promotes nerve growth in the uterus [22]. These studies highlight the importance of the psychological aspect of endometriosis, as stress is associated with increased scores of depression and anxiety [23].

Li and Mamillapalli investigated the pain in endometriosis using female mice. Their investigation demonstrated that mice with endometriosis were more depressed, anxious and sensitive to pain. Moreover, the PCR analysis confirmed different gene expression in insula, hippocampus and amygdala among mice with endometriosis. They concluded that the genes involved in anxiety, locomotion and pain were altered. Their findings suggest that endometriosis may induce pain sensitization, anxiety and depression by modulating brain gene expression and electrophysiology [24].

Endometriosis is characterized by dysfunction spanning hormonal signaling, inflammation, immune dysregulation, angiogenesis, neurogenic inflammation, epigenetic alterations and tissue remodeling. Altered immune function as well as endometrial ectopic tissue contribute to immune dysregulation. Women diagnosed with endometriosis are reported to experience higher rates of depression and anxiety, leading to physiological, clinical, and immune disruptions that can worsen chronic endometriosis. Both endometriosis and depression are
a part of a complicated cycle that intensifies disease complications. That is why

multidimensional treatment is crucial in order to cater both for endometriosis and depression and anxiety disorders [25].

2.2 Psychological and Physical Challenges

Depression and anxiety represent the most frequent comorbidities among patients with endometriosis. It is estimated that 18-23% of patients with endometriosis develop depressive disorder and 10-21% anxiety disorder. Depressive symptoms were established to be moderately-to-strongly correlated with rumination, pain catastrophizing and illness perception of low control and power [26].

Pain is a significant factor that negatively affects the daily life of women with endometriosis. Patients experience chronic pelvic pain, dysmenorrhea, dyspareunia, which describes the pain during sexual intercourse. It causes several implications, influencing their daily activities, family life, education and career and even a relationship with significant others [15].
A systematic review indicates that even up to 11-19% of women experienced no pain reduction after treatment, and 5-59% of women admitted that after treatment some pain remained [27]. This study demonstrated that many women gain only limited benefit from treatment therefore a holistic approach is necessary to deal with pain associated with endometriosis.

Research indicated that out of 358 participants with endometriosis, 14% of them reported pain worsened by orgasm. This feature was associated with poorer sexual health, deep and superficial dyspareunia and poorer mental health, which was revealed by patient health questionnaires and generalized anxiety disorder. Pain worsened by orgasm was investigated to be significantly associated with pelvic floor myalgia, which indicates the importance for various pain diagnosis among women with endometriosis. This study shows how important it is to diagnose pain of different origins in women with endometriosis [28].

What is also important to mention is the consequences of endometriosis on the relationships with partners, family and friends. 50-56% of women admitted that endometriosis affected their intimate relationship, and 8-10% of cases it resulted in a break-up [29]. Another study indicated that women with endometriosis weekly lose an average of 5.3 hours at work,

because of not being able to operate at maximum capability [30]. Together with inability to perform household responsibility, the symptoms of endometriosis significantly impact professional life, domestic responsibilities and social functioning, consequently lowering the quality of life [31].

The strong link between infertility and endometriosis is well established. It is estimated that about 30-50% of women with endometriosis will have difficulty conceiving. There are few theories of the reason, one of which being disease-related inflammation that may lead to poorer quality of oocytes and hence embryo development. Furthermore, more advanced endometriosis may generate the damage to ovaries and fallopian tubes causing infertility [32]. Infertility has a major impact on the mental health of every woman, though infertile women with endometriosis report higher presence of depressive symptoms and lower quality of life compared to women with infertility only. This result indicates that infertility as an endometriosis symptom may not be the only cause for depression and anxiety among women with endometriosis. There is a need for psychological support especially for women suffering from infertility and endometriosis [33].

The delay in diagnosing endometriosis is a widely recognized issue. The time frame between first symptoms and definite diagnosis can alter between 1.5-11.4 years [34].
This delay affects the patients globally suggesting a lack of recognition of clinical symptoms. Others claim that there are not enough clinical criteria for diagnosis and dependence on laparoscopy significantly contributes to delays in diagnosis. Not to mention the "normalization" of symptoms and existing stigma surrounding endometriosis, which will be discussed widely in this article. Diagnosis delay is an important issue because those patients struggle continuously not only due to physical symptoms but also at the mental level as a result of disregarding their suffering [35].

2.3. Stigma as a Catalyst for Mental Health Challenges

Stigma is defined as a characteristic or an attribute that is considered to be socially undesirable, and will disqualify a person from total social acceptance [36]. It is a habit or a pattern of behavior to devalue the characteristic in particular social settings [37]. Such behaviors are vastly understudied, there are only few qualitative studies that examine the

occurrence of endometriosis-related stigma [36]. This is disconcerting, considering that about 10% of women in a population struggle with this disease.

Study conducted among the population of Latina women investigated the stigma experiences related to endometriosis [38]. The main finding focused on the word "*changa*", which among the Puerto Rican population refers to women suffering from endometriosis, who often excessively complain about their pain without any apparent reason. This label was used not only between family members, but also by physicians and healthcare professionals who women consulted with. It was often used when women opened up about their symptoms in order to silence their experience. It is essential to understand that dismissing and normalizing the symptoms of disease may continue to further delay the diagnosis and prevent women from seeking help [38]. Furthermore, such stigmatization may increase their stress level which influences the progression of a disease [22].

Endometriosis-related stigma isn't so unexpected if the menstruation taboo is considered. It is common knowledge that symptoms of endometriosis often begin during adolescence, so in order to diagnose it, girls and young women ought to be taught to observe their bodies. The study qualitatively examined how the potential symptoms of endometriosis is perceived among adolescents in peer/school and community environments [39]. It was concluded that teenage girls with such symptoms perceive social surroundings to be unsupportive and unsympathetic. Peers and friends often dismissive symptoms, advising to "toughen up". School nurses find such severe pain cramples unbelievable and accouse girls of fabricating. Participants also discussed the importance of conversation about menstruation and how often girls learn about periods when they actually get it. Observations confirm that menstrual taboo begins during adolescence and extends to endometriosis-related taboo and stigma among adults. Education about gynecological issues and sexual health should start from an early age in order to make gynecological problems and diseases socially acceptable [39].

Women suffering from endometriosis also struggle with infertility stigma. Despite the fact that male factors contribute to infertility in about 50% of cases, socially it is females who are perceived to have fertility issues [40]. Women who stray from motherhood tend to be disregarded as defective or barren [29]. They are often given unnecessary advice to take herbal remedies or to relax, as if the infertility was caused by psychological distress [41]. These behaviors contribute to infertility stigma which was proven to be linked with

depression and anxiety. Positive significant relationship was found between the score of stigma level and for depression among infertile women [42].

Reinhardt and Eitze highlighted that men exhibit significantly poorer knowledge and stronger menstrual stigma compared to women [43]. Their study investigated the influence of descriptive and injunctive norm messages in education leaflets, taking into account the sex of the participants. It was established that intervention material influences the stigma and policy acceptance by increasing the knowledge [43].

It is imperative to address social approaches to female gynecological problems, such as endometriosis. It is necessary to emphasize the importance of education, because endometriosis related-stigma directly influences psychological well-being as well as distress, which further worsen the disease. A better understanding of stigma and its impact on both the mental and physical health of patients with endometriosis would lead to an improvement in the standards of care for this population of patients [29, 44].

2.4. Exploring the Impact of Endometriosis Treatments on Mental Health and Psychological Well-being

2.4.1. Treatment possibilities

Endometriosis is a complicated condition for both physicians and the patients. Although the prevalence of a disease is about 10%, the actual cause of the disease has not been determined thus no targeted treatment has been established yet. Treatment is most frequently focused on the management of the disease, which depends on the age of women, reproductive desires, the stage of the disease and symptoms experienced by the patient [45]. The leading treatment goal is to remove all or most endometriosis implants, restore natural anatomy, relieve symptoms and delay or prevent the progression of a disease. Management of the disease includes medication or surgery, or the combination of both [45].

Among therapeutic options estrogen-progestin combinations are 1st line therapy for endometriosis-associated pain, with progestin as 1st or 2nd line therapy. Danazol and gestrinone are 2nd and 3rd line therapies, respectively [46].

Surgical treatment of endometriosis include laparoscopy or laparotomy, which target the excision of endometrial lesions and restoration of anatomy. Laparoscopy is preferable because it is less invasive, shortens postoperative recovery time, generates less pain and blood loss. Laparoscopy could be performed as a diagnostic tool or combination of diagnostic tools along with the treatment [46].

Every medicine or surgery has its own side-effects that always should be taken under consideration while deciding on the best treatment plan for the individual suffering from endometriosis.

2.4.2. The Impact of Hormonal Therapy

The systematic review published in 2024, assessed the impact of various contraceptive use on the mental health of women [47]. It was concluded that there was a significantly different impact on mental health whether women had already been diagnosed with mental disorders or not. The findings indicated that there was a slight protective effect of oral contraceptive (OCP) on women's mental health if they had already suffered from mental health disorder. On the other hand, the analysis of women with no prior history of mental disorders revealed a notable increase in depression scores. On the contrary, hormonal therapy was confirmed to have protective effects for anxiety regardless of previous mental health issues. Additional analysis revealed that women using hormonal intrauterine devices (IUD), implants, or patch/ring contraceptive methods face a significantly increased risk of depression [47].

Inconsistently with these findings, the systematic review about the intrauterine devices (LNG-IUD) found no detrimental effect on mental health [48]. They also discovered that there was an improvement of quality of life after 6 or 12 months of IUD usage among women who struggle with endometriosis. However, at the beginning of the treatment the quality of life was still lower compared to healthy women.

Another study examined the levonorgestrel-releasing intrauterine device (LNG-IUD) and its effect of the symptomatology of women with endometriosis. Over the 12 months of treatment several factors were being assessed. Researchers concluded that LNG-IUD insertion significantly reduced dysmenorrhea, dyspareunia and even the size of endometriomas, which all improved the quality of life of the patients [49].

Flores in his study demonstrated that LNG-IUD insertion causes significant improvement in relation to chronic pelvic pain associated with endometriosis, which further influences the positive daily functioning of women [50].

2.4.3. Surgery for Endometriosis: Assessing its Effectiveness in Improving Mental Health Outcomes

Laparoscopy is frequently used in order to remove endometrial lesions and restore normal anatomy. It may not cure the disease completely, but the main point is to relieve symptoms of endometriosis. Such a surgery significantly improves the quality of life of women [51]. Prospective, observational research study demonstrated the improvement of pain, control and power, emotional and social support as well as self-image assessed by EHP-30 questionnaire, all of which enhance the quality of life [51].

Pain is a very disturbing symptom and it often is a target of treatment of endometriosis.
A systematic review and meta-analysis compared the effects of medical and surgical treatment for pain relief. The result of a study didn't demonstrate the significant difference in pain improvement between these two methods of treatment. However, researchers encouraged clinicians to take a less invasive approach as the first line of treatment [52]. Although the choice of treatment may be very difficult, it is essential to assess the risk and benefits for each patient individually. Surgery may not always be the perfect line of treatment, especially for women with minimal endometriosis, and may not improve the quality of life [53].

Pain management isn't the only reason for surgery among women with endometriosis. Surgery may be very beneficial for women with endometriosis who struggle with infertility. A systematic review and meta-analysis compared reproductive outcomes of patients who were subjected to surgery for deep infiltrative endometriosis (DIE) before in-vitro fertilization (IVF) and those patients who didn't undergo a surgery before IVF. The result demonstrated significant benefit of surgery before the IVF procedure. The live birth rate per patient was 2.2 times more likely for women who underwent surgery compared to those who didn't [54].

Laparoscopy is often inevitable when endometriosis is at an advanced level. Moderate-quality evidence suggests that laparoscopic surgery treatment improves the viable intrauterine pregnancies which are confirmed by ultrasound when compared to diagnostic laparoscopy

alone. Although surgery increases the rates of pregnancies, it is important to mention that none of the studies examined live birth outcomes [55].

Despite the fact that surgery focuses mostly on the removal of endometrial lesions and restoring normal anatomy, it also influences the mental state of patients. Prospective observational study was conducted in the University Hospital in Brazil, which evaluated the women with deep endometriosis before and after surgery. The result showed that there was an improvement in mental health status with significant decrease in depression and anxiety symptoms postoperatively [56].

Nevertheless, about 20-30% of women report unrelenting pain disability, even after successful removal of endometrial lesions by laparoscopy, which can not be medically explained. A clinical cohort study evaluated 393 women treated in the endometriosis centre in Germany [13]. Patients, who were going to undergo laparoscopy, were given multiple questionnaires that assessed their endometriosis-related pain disability, state depression, state anxiety, endometriosis state and others. Furthermore, their treatment expectation towards laparoscopy was evaluated. The present study discussed two key findings. Firstly, women with endometriosis are more likely to develop major depression and anxiety disorders. Secondly, endometriosis-related pain disability and state anxiety are the strongest predictors of treatment expectations. Women experiencing major pain disability associated with endometriosis and women with higher states of anxiety are more prone to develop negative treatment expectations, regarding adverse events. This study highlights very important problems. Psychological factors, such as state of anxiety may affect the response to treatment of women who struggle with endometriosis. Moreover, this issue may be solved by having a medical briefing with a patient before laparoscopy. Psychoeducation, clinical support before procedure and empathetic approach to those patients may reduce negative treatment expectations, consequently enhancing the treatment outcome [13].

2.5. Non-medicinal Approach to Managing Endometriosis Symptoms

2.5.1. Acupuncture

Systematic review analysed 493 patients across 10 studies, 6 of which were randomized controlled trials (RCT) [57]. Research aimed to investigate and compare the effects of

exercise programs, acupuncture and surgical interventions on the quality of life (QoL) of women struggling with endometriosis. In compliance with studies mentioned above [51, 56], systematic review concluded that laparoscopic excision of endometrial lesions causes significant pain reduction and improvements in QoL. What's highly appealing is that studies reported substantial decrease in pain and enhancement of psychological welfare after the acupuncture procedures. Being a less invasive procedure than laparoscopy, acupuncture may be an interesting approach to managements of pain associated with endometriosis.

Medical explanation has been provided of why acupuncture procedures result in reduction of pain in women with endometriosis. It has been shown that acupuncture modulates abnormal levels of prostaglandins, β-endorphins, electrolytes, substance P and dynorphins [58]. Meta-analysis that reviewed 793 patients across 14 randomized controlled trials, established that acupuncture result in reduction of pain severity, improved response rate and even decrease serum CA-125 levels, overall being effective in improving dysmenorrhea and pelvic pain associated with endometriosis, which enhance the quality of life of patients. [58]

Acupuncture may be an interesting approach to managements of pain associated with endometriosis. However, despite being safe and effective, acupuncture treatment may not be a long term solution. Single blind, randomized study conducted by Pai Shuang Li, demonstrated that although acupuncture shortens the duration of pain during menstruation, its efficacy dissolves after treatment is discontinued. Additionally, in this study no difference was found in reduction of non-menstrual pelvic pain and dyspareunia [59].

2.5.2. Progressive Muscle Relaxation

Progressive muscle relaxation (PMR) is an exercise technique, which teaches to distinguish between sensations of tension and relaxation. This exercise involved intentional tensing the particular muscle for 5-10 seconds, and then relaxing it completely. Application of this technique is effective in alleviating stress, anxiety and depression. A randomized controlled study compared the influence of escitalopram with PMR and only escitalopram on patient with anxiety disorders, by using Hamilton Anxiety Rating Scale (HAM-A). The study concluded that while both treatments effectively lowered anxiety, the treatment with PMR resulted in significant decrease in HAM-A scale compared to the control group. PMR treatment may be a long term assistance for treatment of anxiety [60].

Progressive muscle relaxation may also benefit women who struggle with endometriosis. Randomized controlled trial demonstrated that PMR training is effective in improving anxiety, depression and QoL of endometriosis patients that were under GnRH agonist therapy. The PMR group of patients showed significant improvement in state anxiety, trait anxiety and depression after intervention, compared to non-PMR group, who were only under GnRH therapy [61].

2.5.3. Psychological support

Reducing pain associated with endometriosis is an essential part of a therapy. Not only does the pain decrease the quality of life, but also contribute to a complex pain-depression cycle [62]. However, it is not the only factor that has an impact on the mental health of women with endometriosis. Better self-esteem, body esteem and emotional efficacy is correlated with better psychological outcomes [63]. The systematic review highlighted the significance of evidence-based psychological therapies in managing endometriosis-related symptoms, showing their effectiveness in alleviating anxiety and depression. [64]

While investigating many psychological interventions, cognitive behavioral therapy (CBT) and progressive muscle relaxation are perceived to be the most effective methods regarding quality of life, mood and anxiety. [65] The use of CBT intervention is promising in reducing severity of pain in women with endometriosis. Meta-analysis concluded that CBT was associated with improved mood and pain catastrophizing at post-treatment in comparison to treatment-as-usual control group. [64]

Systematic review investigated the pain-focused psychological interventions among women with endometriosis. The study demonstrated that all listed psychological interventions, including CBT, mindfulness therapy, yoga, psychoeducation and PMR training, positively influenced pain relief. However, this review emphasises the importance of providing more good-quality studies that examine the effect of mentioned interventions on the pain in women with endometriosis [66].

2.5.4. Social Media

Regardless of the fact that social media are often perceived to be a risk of misinformation for patients, 85% of women admitted that social media had been helpful in management or living

with endometriosis [67, 7]. The study indicated that online support groups and Instagram spaces made women “feel less alone”. Not only did it give them more understanding of this disease but also exposed them to additional pain management treatments. It emphasizes the fact that there is a considerable gap of communication and knowledge between the patients and doctors in case of endometriosis, which further encourages women to seek support and information online. The reason for that may also be stigmatization of patients with chronic pain, which can still be encountered [68].

Holowka’s study demonstrated that the missing factor in successful treatment of endometriosis may be clear explanations and empathy from healthcare providers [67]. Being heard, understood and invited to make informed medical decisions after receiving detailed information, greatly increases trust in doctors. It shall transform a frustrating and scaring experience into a guided and supported journey, which enhances the cooperation between patients and medical practitioners [69].

III CONCLUSION

Endometriosis is proven to have a significant relationship with mental health, symptoms of depression and anxiety, consequently lowering the quality of life. Not only does the symptoms of endometriosis, such as chronic pelvic pain, dyspareunia, dysmenorrhea, infertility influence the mental health of the patients, but also endometriosis modulates the brain gene expression that is associated with pain sensitization, anxiety and depression [15, 24, 26]. Psychological support is essential considering that women suffering from endometriosis are more susceptible to mental health disorders, which furthermore may induce distress and influence the disease progression [21, 22, 23 25]. This review aims to highlight the urgency for social education on account of stigmatization that women with endometriosis experience. The qualitative study conducted in 2024 reveals that women with endometriosis experience significant stress and anxiety while visiting the gynecological emergency department. They are unsure whether they would be listened to or feel diminished by healthcare professionals [70]. These findings affirm the importance of a clear and empathetic approach to a patient seeking help. Not only may it improve the cooperation between a patient and specialist but also enhance the treatment outcome [13]. Multidisciplinary care including gynaecologists, psychologists, physiotherapists, pain specialists, sex therapists and more, is essential for

endometriosis intervention strategy since it may have significant impact on the disease progression [71].

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