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RESEARCH ARTICLE
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A STUDY ON THE PREVALENCE OF SYMPTOMS OF ENDOMETRIOSIS IN ADOLESCENT GIRLS VISITING A TERTIARY CARE CENTRE IN TAMIL NADU

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ABSTRACT:

Introduction: The existence of endometrial glands and stroma outside the uterine lining is the hallmark of endometriosis. The incidence of endometriosis in teenagers ranges from 19% to 73%. Nevertheless, it is still unclear how common the illness actually is among adolescents in general. In our study, adolescents who exhibit symptoms suggestive of endometriosis or who are at risk of developing the condition were identified by a questionnaire.

Methodology: This six-month, single-center study was carried out in a tertiary care hospital's Obstetrics and Gynecology department. A validated questionnaire, prepared after reading the literature and selecting risk factors, symptoms, and phenotypic aspects of endometriosis, was given to each participant of the 240 teenage females who were enrolled in the study.

Results: It was found from analysis of the responses to the questionnaire that out of 240 adolescents, majority of the adolescents belonged to 15-16 years of age (53.8%) and 52.1% had a normal BMI. A significant proportion (35.8%) had periods lasting more than 5 days**.** 38.8% of adolescents experienced pain. The most common symptom seen was diarrhea (23.3%) followed by constipation or painful bowel movements (22.9%). About 19.2% of the participants reported experiencing flatulence, gastritis or vomiting and 18.3% reported painful or difficult urination. Increased frequency of urination was seen in 19.2% of the adolescents and 11.3% of the participants reported incomplete emptying of the bladder.

Conclusion: In conclusion, because teenage endometriosis presents in a variety of ways, diagnosis can be challenging. Adolescents at risk of endometriosis can be promptly evaluated with the use of an endometriosis screening questionnaire, which could be a valuable tool for both physicians and self-screening.

Keywords: Adolescents, endometriosis, symptoms, awareness, diagnosis, intervention.

INTRODUCTION:

An estimated 10% to 15% of women of reproductive age and 70% of women who experience persistent pelvic pain are thought to have endometriosis, which is defined as endometrial tissue transplanted outside the uterus. The prevalence of endometriosis among teenage girls experiencing pelvic pain after laparoscopy is less well-established; estimates vary from 19% to 73%. The most typical menstrual symptom among young women and adolescent girls is dysmenorrhea, or monthly discomfort. The majority of teenagers suffer from primary dysmenorrhea, characterized by painful menstruation without pelvic disease. Menstruation that hurts because of pelvic pathology or a known medical disease is referred to as secondary dysmenorrhea. Endometriosis is the leading cause of secondary dysmenorrhea in adolescents leading to absenteeism and inability to carry out daily activities. (1)

Although the diagnosis of endometriosis is frequently delayed, women with the disease frequently say that their symptoms began in their adolescence. Gastritis, diarrhea, bloating sensation, dysuria, increased frequency of micturition, dyschesia, chronic pelvic discomfort,painful cycles are among the typical symptoms of endometriosis.Teenagers experiencing pelvic discomfort can be difficult to diagnose since they can describe both cyclic and acyclic pain, and they might also exhibit a variety of confusing symptoms. As a result, this delay might reduce their capacity for reproduction and functional results.

According to the ESHRE, teenagers who exhibit endometriosis symptoms may be identified using an endometriosis questionnaire tool, allowing for the early commencement of treatment and avoidance of the disease's progression. Thus, the goal of our study was to test teenagers using the questionnaire instrument in order to detect endometriosis symptoms in teenagers. (2)

METHODOLOGY:

This study is a cross-sectional study using questionnaire conducted at single tertiary center in Department of Obstetrics and Gynecology, Sri Muthukumaran Medical College Hospital and Research Institute, Chennai with an aim to screen adolescents based on a questionnaire tool, for identifying symptoms of endometriosis and facilitate early diagnosis of endometriosis. The study was conducted over a period of 6 months.

All the adolescent girls, who had attained menarche were included in this study. Those with history of previous pelvic surgeries, mullerian anomalies and genital tuberculosis were excluded from the study.

Considering a 10% drop out from the study, the sample size was calculated and adjusted to 240.

A Validated questionnairewas developed after reviewing literature, selected risk factors, symptoms and phenotypic traits of endometriosis and was given to each participant

Questionnaire:

Occupation: Age:
Height: Weight:
Blood Group:

1.At what age did you start with your menstrual periods?

A) <8 years B) 8-11 years C) 11-13 years D) >13 years

2. Are your periods regular?

A) Yes B) No

3. How many days do your periods last?

A) <3 days B) 3-5 days C) >5 days

4. Do you experience severe lower abdomen pain or back pain or leg cramps during periods?

A) Yes B) No

5. Does the pain start a few days before the onset of periods?
A) Yes B) No
6. Does the pain get relieved after onset of periods?
A) Yes B) No
7. Does pain continue even beyond the first 2 days of periods?
A) Yes B) No
8. Do you need to take NSAIDS (pain killers) to relieve the pain?
A) Yes B) No
9.Have you taken oral contraceptive pills as treatment for pain?
A) Yes B) No
10.Did the pain get relieved after taking oral contraceptive pills?
A) Yes B) No
11.Do you experience spotting or bleeding in between periods?
A) Yes B) No
12. Do you experience diarrhoea during periods?
A) Yes B) No
13. Do you get constipated or experience painful defecation during periods?
A) Yes B) No
14. Do you experience flatulence or gastritis or vomiting during periods?
A) Yes B) No
15. Do you experience pain while passing urine during periods?
A) Yes B) No
16. Do you experience increased frequency of urination during periods?
A) Yes B) No
17. Do you experience incomplete bladder emptying during periods?
A) Yes B) No
18. Have you ever been absent from school/college due to extreme discomfort during periods?
A) Yes B) No
19.Does your mother / sister have a history of severe pain during periods or have been diagnosed with endometriosis?
A) Yes B) No
20. Have you ever got an ultrasound/ scan done?
A) Yes B) No
21. Are you aware of endometriosis?
A) Yes B) No

Continuous data were written either in the form of its mean and standard deviation or in the form of median and interquartile range, as per the requirement. Analysis was conducted using IBM SPSS. Discrete categorical data will be represented in the form of either a number or a percentage (%).

RESULTS

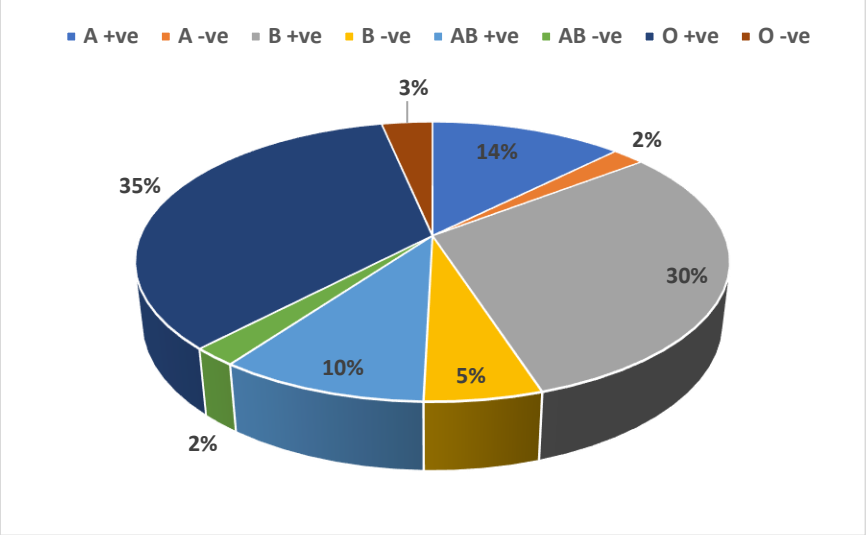
Total of 240 adolescents were included for the study to determine the prevalence of symptoms of endometriosis. Majority of the adolescents belonged to 15-16 years of age (53.8%) and 46.3% of the study were of 17-18 years and mean age in the study was 16.3± 0.82 years.Over half the adolescents (52.1%) had a normal BMI indicating a relatively healthy weight status and small proportion of overweight (9.6%) and obese (1.7%) was noted among adolescents.**(Table 1)**

Table 1: Socio-demographic profile of adolescents with dysmenorrhea.

Socio-demographic profile	N (%)
Age (in years)	
15-16	129 (53.8%)
17-18	111 (46.3%)
BMI (Kg/m^2)	
Underweight (<18.5)	88 (36.7%)
Normal (18.5-24.9)	125 (52.1%)
Overweight (25-29.9)	23 (9.6%)
Obese (>30)	4 (1.7%)

Most of the students were of O +ve (34.6%) and minor percentage of the students belonged to A-ve and AB-ve (2.1%) each.**(Graph 1)**

Graph 1:Distribution of blood groups of adolescents with dysmenorrhea.



The majority (53.3%) of adolescents experienced menarche (first menstrual period) between the ages of 11 and 13 years, which is within the typical range for pubertal development and a smaller proportion (32.1%) had menarche after 13 years of age. A very small percentage (0.4%) experienced precocious puberty, with menarche occurring before 8 years of age. Most participants (87.9%) reported having regular menstrual cycles. Regarding the duration of menstrual flow, half (50%) experienced periods lasting 3-5 days, which is within the normal range. However, a significant proportion (35.8%) had periods lasting more than 5 days**. (Table 2)**

Table 2: Distribution of adolescents with dysmenorrhea according to variables.

Variables	N (%)
Age at menarche (in years)	
< 8	1 (0.4%)
8-11	34 (14.2%)
11-13	128 (53.3%)
>13	77 (32.1%)
Regularity of menstrual cycles	
Yes	211 (87.9%)
No	29 (12.1%)
Periods last for (days)	
< 3	34 (14.2%)

3-5	120 (50%)
>5	86 (35.8%)
Severe abdominal pain/back pain/leg cramps during periods	
Yes	163 (67.9%)
No	77 (32.1%)
Pain starts a few days before the onset of periods	
Yes	93 (38.8%)
No	147 (61.3%)
Pain gets relieved after onset of periods	
Yes	115 (47.9%)
No	125 (52.1%)
Pain continues beyond the first 2 days of periods	
Yes	113 (47.1%)
No	127 (52.9%)
Need to take painkillers to relieve pain	
Yes	64 (26.7%)
No	176 (73.3%)
Taken OC pills as treatment for pain	
Yes	39 (16.3%)
No	201 (83.8%)
Pain got relieved after taking OC pills	
Yes	55 (22.9%)
No	185 (77.1%)
Spotting/bleeding in between periods	
Yes	50 (20.8%)
No	190 (79.2%)

A substantial proportion (67.9%) reported experiencing severe abdominal pain, back pain, or leg cramps during their periods, which is a common complaint among menstruating individuals. Nearly two-fifths (38.8%) experienced pain a few days before the onset of their periods, which could be indicative of premenstrual syndrome (PMS) or dysmenorrhea. Approximately half (47.9%) reported that their pain was relieved after the onset of their periods, while the other half (52.1%) experienced continued pain. **(Table 2)**

Almost half (47.1%) reported that their pain continued beyond the first two days of their periods, suggesting prolonged discomfort. While a significant proportion (73.3%) did not need to take painkillers, over a quarter (26.7%) required pain medication to manage their menstrual pain. A small percentage (16.3%) had taken oral contraceptive (OC) pills as a treatment for menstrual pain, with only 22.9% of those reporting relief from pain after taking OC pills.

Intermenstrual bleeding or spotting between periods was reported by 20.8% of participants, which could be indicative of hormonal imbalances or other underlying conditions.**(Table 2)**

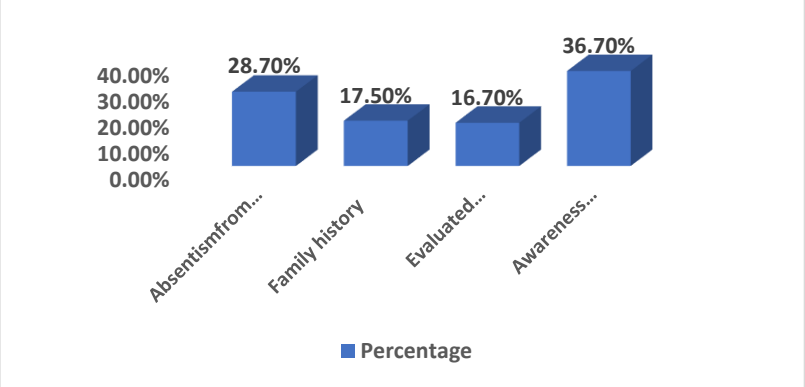
Out of 240 adolescents, the most common symptom seen was diarrhea (23.3%)and 22.9% of the participants experienced constipation or painful bowel movements. About 19.2% of the participants reported experiencing flatulence, gastritis or vomiting and 18.3% of the participants reported painful or difficult urination. Increased frequency of urination was seen in 19.2% of the adolescents and 11.3% of the participants reported incomplete emptying of the bladder. **(Table 3)**

Table 3: Prevalence of symptoms of endometriosis among adolescents with dysmenorrhea.

Symptoms	N (%)
Diarrhea	56 (23.3%)
Constipation/painful defecation	55 (22.9%)
Flatulence/Gastritis/Vomiting	46 (19.2%)
Painful micturition	44 (18.3%)
Increased frequency of micturition	46 (19.2%)
Incomplete emptying of bladder	27 (11.3%)

Over a quarter of the adolescents (28.7%) reported missing school or college due to their condition, suggesting that the symptoms significantly impacted their attendance and academic performance. Approximately 17.5% had a family history of endometriosis, indicating a potential genetic or hereditary component. A smaller proportion of participants (16.7%) underwent sonological evaluation to assess the presence or extent of endometriosis. About 36.7% of adolescents reported being aware of endometriosis, suggesting that a significant portion of the study population had some knowledge or understanding of the condition**.(Graph 2)**

Graph 2: Family history and Quality of life among adolescents with dysmenorrhea.



DISCUSSION:

Endometrial tissue abnormally existing outside the uterine cavity is the hallmark of endometriosis, which is a chronic, progressive, inflammatory illness.

Up to 10% to 15% of women who are of reproductive age have endometriosis; this condition is more common in those who have dysmenorrhea (40–60%), subfertility (21–47%), and/or pelvic discomfort (71-287%). Between 19% and 73% of teenage girls experiencing pelvic pain also have endometriosis. There is a wealth of information about the frequency and severity of endometriosis in women of reproductive age, but relatively little information about its prevalence in teenage girls, which accounts for the wide range in incidence. (3)

Ingrid J. Rowlands et al. found that women who gained weight after the age of 18–23 had a decreased risk of endometriosis that was clinically proven compared to those who did not have endometriosis and whose weight remained consistent in their cohort analysis, which examined 11794 women. (4)

A meta-analysis conducted by Yong Liu et al. revealed that for every 5 kg/m^2 rise in BMI, there was a 33% reduction in the risk of endometriosis overall. 52.1% of participants in our study had a normal BMI, which indicates that they are generally in a healthy weight range. Only 9.6% and 1.7% of participants, respectively, were overweight or obese. (5)

Farideh Malekzadeh et al. and Alhammadi MH et al., found no evidence of a significant relationship between the ABO and Rh blood types and the risk of endometriosis.(6,7) In our study, 34.6% of teenagers were O+ve, followed by B+ve (30%) while least (2%) were Rh -ve.

An early menarche increases a woman's exposure to the menstrual cycle. Retrograde menstruation, while a physiological process during menses, is accompanied with live, steroid-responsive endometrial tissue that clings to the peritoneum and invades the pelvic structures in women with endometriosis.
Although it has been suggested that an earlier menarche, that is, before the age of 11 or 12 and longer menstrual cycle is linked to a higher risk of endometriosis (8), some research have not discovered this link. (9) The disease's variability could account for these disparities. A lower percentage (32.1%) of adolescents in our study had menarche (the first menstrual period) after the age of 13, which may be called late menarche, and the majority (53.3%) experienced menarche between the ages of 11 and 13, which is within the usual range for pubertal development. A very tiny proportion (0.4%) went through precocious puberty, before the age of eight. In our study, a noteworthy percentage (35.8%) of participants experienced menstrual flow that lasted longer than five days.

Adolescence is when endometriosis symptoms usually start to appear. Two-thirds of adults with endometriosis who participated in a registry survey stated that their first pelvic symptoms appeared before the age of 20, and 21% said they experienced discomfort before the age of 15.
Sometimes teenagers with endometriosis present in unusual ways and do not have a laparoscopy, which might result in an underdiagnosis and make it challenging to determine the true disease prevalence. According to a systematic analysis by Janssen et al, the prevalence of endometriosis was found to be 62% in teenagers receiving diagnostic laparoscopy for any kind of pain, 75% in adolescents experiencing chronic pelvic pain that was unresponsive to treatment, and 70% in adolescents experiencing dysmenorrhea. Hirsch et al. conducted another comprehensive analysis that included studies that used both laparoscopy and imaging to diagnose endometriosis in teenagers; the prevalence ranged from 25% to 100%, with a mean of 64%. (3,10)
A significant percentage (67.9%) of the participants in our study reported having severe back pain, leg cramps, or abdominal pain during their periods, which is a common complaint among people who are menstruation. Nearly two-fifths (38.8%) reported having premenstrual pain. Of those who reported pain, about half (47.9%) said it subsided once their periods started, while the other half (52.1%) said it persisted throughout the cycle.

Depending on the location and severity of the illness, patients may present with a wide range of symptoms, including painful periods (dysmenorrhea), painful sex (dyspareunia), painful defecation (dyschezia), painful urination (dysuria), and intermenstrual hemorrhage.
In our study out of 240 adolescents, the most common symptom seen was diarrhoea followed by constipation or painful bowel movements, flatulence, gastritis or vomiting, painful or difficult urination, increased frequency of urination and incomplete emptying of the bladder. High suspicion and early diagnosis and treatment would help prevent spread of disease and worsening of symptoms.
We found that 28.7% of adolescents reported missing school or college due to their condition, suggesting that the symptoms significantly impacted their attendance and academic performance. This finding indicates a need for guidance strategies to help alleviate symptoms and employers reduce productivity loss. (11)

The heritability pattern of endometriosis was first proposed by Goodall in 1943. Approximately 17.5% had a family history of endometriosis, indicating a potential genetic or hereditary component. Further studies are needed in this aspect. (12,13)
Only 16.7% of subjects had sonological evaluation to determine whether or not they had endometriosis. A considerable proportion of the survey population appeared to have some awareness of endometriosis, as in 36.7% of teenagers. (14)

Before being diagnosed with endometriosis, adolescents may consult with several doctors. According to a report by Greene et al., teenagers were three times less likely to seek medical assistance for their first symptoms than adults.

Due to stigma from classmates, families, and school staff, adolescents may feel unfortunate and be pushed to minimize their symptoms. Additionally, medical personnel may downplay the severity of their symptoms, lack understanding of how endometriosis manifests in teenagers, and be reluctant to diagnose the illness in this age group. Therefore, it seems that both the patient and the clinician are mediating the diagnostic delay in teenagers. (15,16)

Without treatment, teenage endometriosis can be a chronic illness that could worsen. Relieving symptoms and maintaining fertility in the future are the goals of early diagnosis and treatment. Treatment plans should be tailored to each patient based on contraindications to hormone use and possible side effects. According to ESHRE guidelines, teenagers who have severe dysmenorrhea and may have endometriosis should receive empirical medical care. The first line of treatment is hormone therapy, like progestogens, LNG-IUS, or hormonal contraceptives in combination. NSAIDs should be treatment choice if first-line hormone therapy isn't an option.

When teenagers do not respond to treatment, a laparoscopy is advised to confirm the diagnosis of endometriosis. GnRH agonists may also be considered for up to a year, as they suppress the hypothalamus, resulting in a hypoestrogenic state that can cause amenorrhea, ease pelvic pain, and shrink endometriosis lesions. Memory loss, depression, hot flushes, and loss of bone density are common adverse effects of hypoestrogenic states. "Add-back therapy," which involves taking a small amount of hormone every day, is recommended as an adjuvant to reduce side effects. It is advised that teenagers with endometriosis who require surgical treatment should have it done laparoscopically. The goal should be to completely remove all endometriotic lesions that are apparent by laparoscopy

The ESHRE also suggests that teenagers who have endometriosis be made aware of the possible harm that surgery and ovarian endometriosis may cause to ovarian reserve and future fertility. Although the true benefit, safety, and indications in teenagers with endometriosis are uncertain, adolescents should be informed about the availability of fertility preservation options. (2,17,18)

CONCLUSION:

Timely referral to a gynecologist experienced with laparoscopic diagnosis and treatment of endometriosis is critical to expedite care for adolescents with pelvic pain. Once the disease is diagnosed and treated, these patients have favorable outcomes with hormonal and nonhormonal therapy. Studies have demonstrated how adolescent endometriosis negatively affects patients' quality of life and psychosocial functioning. Development of therapeutic interventions targeting psychosocial function and quality of life is imperative for adolescent patients. (19,20)

LIMITATIONS:

The limitation of this study is that it includes a small population and their evaluation. We have done only symptomatic assessment to screen and identify high risk patients, further evaluation is needed for confirmation of endometriosis.

Our study may be limited by using data from one gynecological practice, as opposed to a more heterogeneous population

NOVELTY:

The true disease prevalence of endometriosis in the general adolescent population remains unknown. The purpose of our study was to screen adolescents based on a questionnaire tool, for identifying symptoms of endometriosis. A lot of retrospective studies are available with results compiled from data obtained by menstrual experiences during their adolescence recalled by adult females. Not many studies are available regarding screening of adolescent girls for symptoms of endometriosis

DECLARATIONS

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Sri Muthukumaran Medical College & Hospital.

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