PREDICTION OF POLY-CYSTIC OVARIAN SYNDROME   VIA WEBSITE CREATION

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ABSTRACT

Poly-Cystic Ovarian Syndrome, or PCOS, is a disorder that affects a large percentage of women worldwide who are of reproductive age and can develop at any point after puberty. Most people who are diagnosed are in their 20's or 30's age. That plays a significant role the infertility reason. There aren't many clinical tests available right now to identify PCOS, which burdens patients. In order to address this issue, the system for the quick and simple detection of PCOS is proposed in this work. It involves the development of a software application using HTML that has appropriate symptoms and crucial biomarkers.

Keywords: *PCOS, SHBG, Androgen (FAI), HTML*

I.   INTRODUCTION

PCOS (Poly-Cystic ovary syndrome) is a endocrine disorder characterized by changes in the female hormone levels abnormal production of male hormones. It's characterized by a range of symptoms including irregular menstrual cycles, excess androgen levels, and polycystic ovaries, that contain numerous small cysts. Key Features of PCOS: Irregular **Menstrual Cycles:** Women with PCOS often experience fewer menstrual periods than usual, or sometimes none at all. This can be due to anovulation, where the ovaries do not release an egg each month. **Excess Androgens**: Elevated levels of male hormones (androgens) can lead to physical signs such as excess facial and body hair (hirsutism), severe acne, and male-pattern baldness. **Polycystic Ovaries:** Ultrasound imaging can show ovaries with multiple small follicles. Despite the name, not all women with PCOS will have polycystic ovaries, and having polycystic ovaries does not necessarily mean a woman has PCOS. This condition leads to ovarian dysfunction with increased risk of miscarriage and infertility. And the other optimal symptoms include Abnormal hair growth, Acne, Obesity, Thinning hair, Cysts, Pelvic pain. PCOS is a chronic condition and cannot be cured. The cause of PCOS is unknown but women with a family history or type 2 diabetes are at higher risk. However, some symptoms can be improved through lifestyle changes, medications and fertility treatments. Women get PCOS at any time after puberty. Most that are diagnosed in their age of 20's or 30's. It is a significant public health problem and it is one of the commonest hormonal disturbances affecting women of reproductive age. They may have a higher chance of getting PCOS if you have obesity or if other people in your biological family have PCOS, and up to 70% of cases are undiagnosed.

II.   RELATED WORKS

There are few clinical tests and scans are available for diagnose the PCOS. It includes the discussion of your symptoms, medications, medical conditions, menstrual periods and any weight changes. And the physical exam includes checking for signs of excess hair growth, insulin resistance and acne. Others include Pelvic **examination** - During this procedure the health care providers can check your reproductive organs for masses, growths or other changes, **Blood tests -** measure hormone levels. other blood testing, such as fasting cholesterol and triglyceride levels. A glucose tolerance test can measure your body's response to sugar (glucose). **Ultrasound** – It check

the appearance of the ovaries and the thickness of the lining of your uterus. A wand like device (transducer) is placed in the vagina. That transducer emits sound waves that are translated into images on a computer screen.
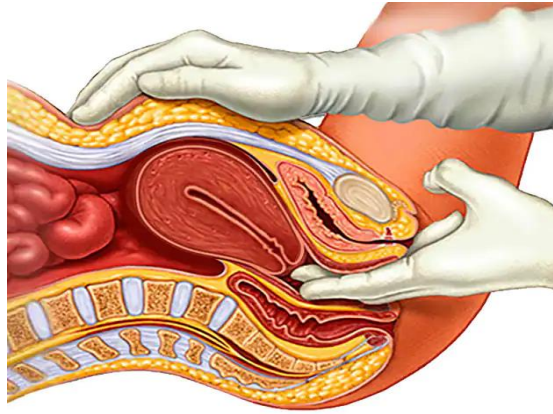

Fig 1. Pelvic Examination

Fig 1. Illustrate a transvaginal ultrasound involves inserting an ultrasound probe, or transducer, into the vagina. This allows for detailed visualization of internal pelvic organs, such as the uterus and ovaries. The inset image shows a polycystic ovary, which is often diagnosed using this method. Transvaginal ultrasounds are crucial for detecting conditions like polycystic ovary syndrome (PCOS), uterine fibroids, and ovarian cysts.
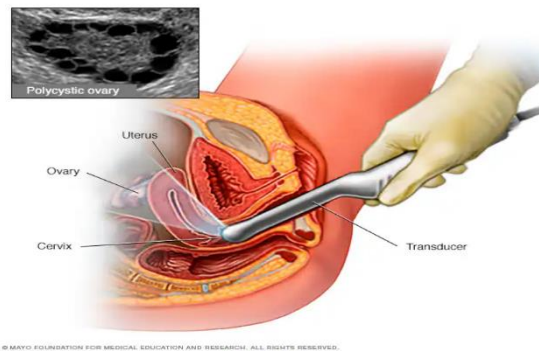

Fig 2. Transvaginal Ultrasound

Fig 2. Depicts a bimanual pelvic exam, where a healthcare provider uses two fingers inserted into the vagina while pressing on the abdomen with the other hand. This technique helps assess the size, shape, and position of the uterus and ovaries, and detect abnormalities like tumours or inflammation. Both procedures are fundamental in diagnosing and managing reproductive health issues, ensuring proper gynaecological care.

The purpose of this study is to discover characteristics that contribute to a diagnosis of PCOS in female patients who have hair thinning. Dermatologists who treat female pattern hair loss (FPHL) patients play an important role in detecting PCOS early and providing suitable treatment. Hirsutism and acanthosis nigricans are emphasised as reliable clinical markers of PCOS, despite a lack of evidence on the frequency of PCOS in patients with hair thinning. A study conducted between January 2017 and June 2019 discovered that 8% of women diagnosed with FPHL had PCOS, and an additional 3.2% were sent to reproductive endocrinology from a hair loss clinic. And it also revealed that hirsutism and acanthosis nigricans are accurate clinical markers of PCOS, with 80% of patients receiving a clear diagnosis of PCOS. These considerations emphasise dermatologists' critical role in identifying potential symptoms of PCOS in patients with hair thinning, as well as the significance of timely referral and full assessment for proper diagnosis and management [1].

This study provides useful information on how to manage weight loss in obese and PCOS women seeking conception. The authors explore the difficulties of managing weight in PCOS, the effects of lifestyle treatments, and the potential benefits of pharmaceuticals on reproductive results. PCOS is estimated to affect 6% to 10% of women of reproductive age. And it also highlighted the relevance of focusing on weight loss in women with PCOS to improve reproductive results [2].

 In this issue, we explore the complexities of polycystic ovarian syndrome and Endometriosis as two extremes of the health continuum. Learn about the impact of endometriosis on women's quality of life, the heritable component of the disease, and the current treatment options available. Endometriosis is a common disorder affecting 10% of women, characterized by the growth of endometrial tissue

outside the uterus, leading to pelvic pain and reduced fertility. Polycystic Ovarian Syndrome (PCOS) affects 20% of women, causing anovulation, hyperandrogenism, and insulin resistance. Both conditions may be influenced by prenatal factors affecting the development of the hypothalamic–pituitary–ovarian axis. Endometriosis is associated with decreased LH, testosterone, and AMH levels, while PCOS is linked to increased levels of these hormones [3].

Menstrual cycle characteristics, polycystic ovary syndrome, and the chance of developing ovarian cancer. This study investigates the potential link between these characteristics and certain histologic subtypes of ovarian cancer, offering information on critical concerns for women's health. And it is also titled that "Long and irregular menstrual cycles, polycystic ovary syndrome, and ovarian cancer risk in a population-based case-control study," investigates the link between menstrual cycle characteristics, polycystic ovary syndrome (PCOS), and the risk of specific histologic subtypes of ovarian cancer. The study included 2041 instances of epithelial ovarian cancer and 2100 controls, and it looked at characteristics such menstrual cycle irregularity, cycle length, and self-reported PCOS diagnosis [4].

This study investigates the role of Sex Hormone-Binding Globulin in Polycystic Ovary Syndrome, including causes, manifestations, genetics, and treatment choices. It also examines how SHBG levels affect PCOS and learns about potential interventions to improve symptoms and results. Obesity's function in worsening metabolic irregularities and hormonal imbalances in women with PCOS, namely its effect on SHBG levels. The significance of SHBG as a sex hormone transporter in controlling the absorption of steroids and determining the severity of PCOS symptoms [5]

III.   PROPOSED WORK

HTML (Hypertext Markup Language) is the standard markup language used to create and structure content on the web. It forms the backbone of web pages and web applications, allowing developers to define the structure, layout, and content of a webpage using various elements and attributes. Key Features of HTML: Structure and Layout: HTML provides the means to organize content into headings, paragraphs, lists, tables, and other structural elements. This helps in creating a coherent and accessible document structure. Hyperlinks: One of the core features of HTML is the ability to create hyperlinks, which allow users to navigate between different pages and resources on the web. Multimedia Support: HTML supports the inclusion of multimedia elements such as images, videos, and audio files, enabling rich media experiences on web pages.HTML is an essential technology for web development, providing the necessary tools to structure and present content on the web. Its simplicity, combined with its powerful features, makes it a fundamental skill for anyone looking to create or manage web content. Creating a software application that uses HTML for detecting PCOS (Polycystic Ovary Syndrome) with their symptoms and biomarkers involves multiple components. Below is a high-level description of how this could be structured.

The proposed work of the project is explained by the flow of the **fig.3** To forecast polycystic ovarian syndrome by developing a website utilising an HTML application. The created a website that incorporates the optimal PCOS symptoms and the necessary biomarkers to predict it. In the website, the predict of the patients PCOS is done by three stages. On the first page of the website, there is a start button.
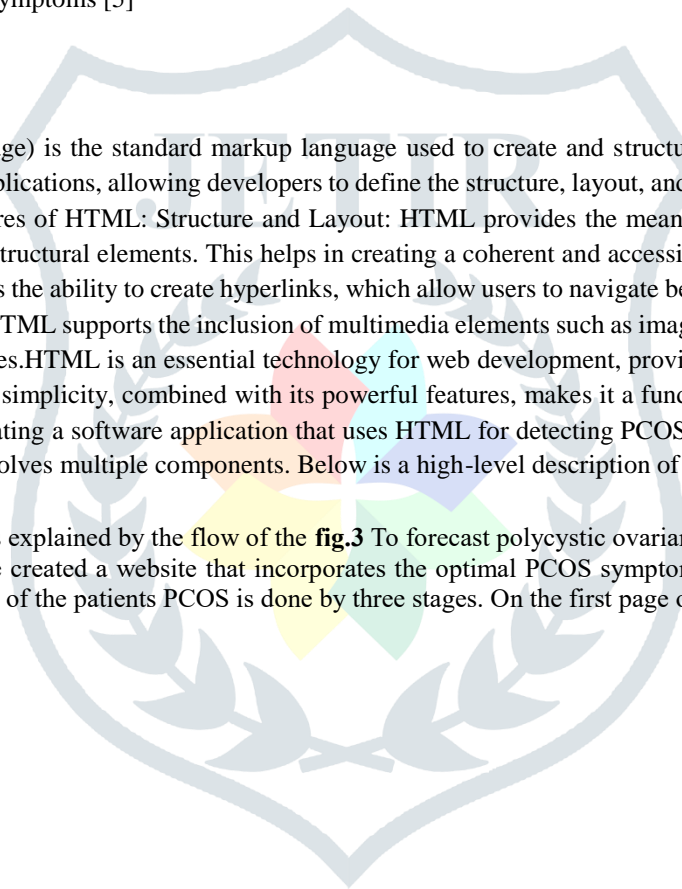
By clicking the start button, you can go to the second page. On the second page of the website, which is the first stage of prediction, it' get the input data from the people about their menstrual cycle for the past three months, and the result is displayed on the same page it shows the result as they may had much regularity or irregularity based on the information they provide. The third and fourth pages of the website are dedicated to the most important symptoms and critical indicators, such as the free androgen index and testosterone level. The second stage of prediction is about the symptoms, When the patient enters the third page of the website, it's asked about the symptoms. The website incorporates 5 optimal and essential symptoms by the studies, which includes irregular periods, pelvic pain, obesity, hair thinning, and abnormal hair growth. When the people enter the third page, the list of symptoms are showed in the page, and by clicking the symptoms that they are facing, it shows the possibility of their PCOS. according to the data presented. The final level of prediction, which is the fourth page of the website, includes critical biomarkers such as testosterone and the free androgen index. On that page, the website inquiries about the amounts of the aforementioned biomarkers. When the people enter their hormone levels, the website calculates the SHBG on the backend. The results will then be displayed depending on the individual's SHBG level, as well as an opinion based on the severity of their syndrome.

IV. RESULTS AND DISCUSSION

The Results and Discussion section of the paper discusses the different stages of prediction of Poly-Cystic Ovarian Syndrome (PCOS) through the website created using HTML application. Overall, the website created using HTML application aims to help users identify the likelihood of PCOS by entering symptoms and biomarkers. By guiding users through different stages of prediction and incorporating essential factors such as menstrual cycle regularity, symptoms, and biomarker levels, the website provides a simple and quick way to detect PCOS. This approach can be beneficial for individuals seeking early detection and management of PCOS, ultimately improving reproductive health outcomes for women with this condition.
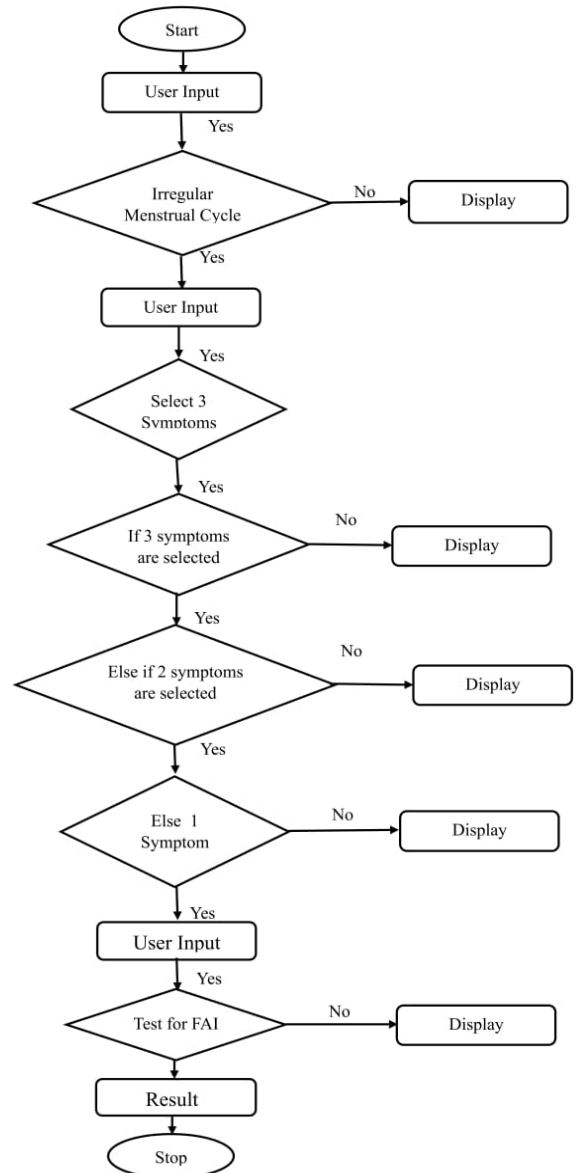

Fig 3. Flow diagram

STAGE .1 DIAGNOSIS

Checking for Menstrual Cycle Irregularties

Enter the last three months menstrual cycle date of commence and end

Month 1

Enter start date: 12/06/2024
Enter end date: 17/06/2024

Month 2

Enter start date: 23/07/2024
Enter end date: 29/07/2024

Month 3

Enter start date: 28/08/2024
Enter end date: 03/09/2024

Submit

The Menstrual Cycle is Not Regular: Mon Jun 17 2024 - Tue Jul 23 2024 - 36 days
Move to Next Page

STAGE .2 DIAGNOSIS

Choose the symptoms experienced

- ☑ Irregular Menstrual Cycle
- ☐ External Hair Growth
- ☑ Severe Pelvic Pain
- ☑ Obesity
- ☐ Abrupt Hairfall

[Submit]

You are susceptible to PCOS by 60%

[Move to Next Page]

STAGE .3 DIAGNOSIS

Testing for Hyperandrogenism

Enter Testosterone Value: [1]
Enter SHBG Value: [2]

[Submit]

The Normal FAI (Free Androgen Index) Value is 7-10 %, Your Condition results in 50 which is Hyper Androgenism

[Get Overall Analysis]

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