

Research Paper

## Psychological and Physiological Impact of PCOS on the Undergraduate Students of Delhi University

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### ABSTRACT

Polycystic ovarian syndrome (PCOS) is the most common endocrine disorder among women of reproductive age in the developed world, affecting 5–10% of this population. Women with PCOS may complain about irregular menstrual periods and/or heavy menstrual bleeding, infertility, excessive growth of coarse facial and body hair, obesity, oiliness of the skin, seborrhoea, and cystic acne. As some symptoms cause changes that are visible to other people and interfere with the norms of femininity, this disorder often has a negative effect on individuals' mental health and well-being. The impact of these symptoms on a woman's quality of life may be profound and can result in psychological distress that threatens her feminine identity. The condition may therefore result in altered self-perception, a dysfunctional family dynamic, and problems at work. The cases of depression and anxiety among females with PCOS are much higher than ordinary women. Majority of studies till date focuses mostly on the physiological aspect of PCOS but the present survey-based study took into account both physiological and psychological impacts of PCOS on the undergraduate females of Delhi university, since this age group caters to immense stress and anxiety due to their academic and career deciding burden. The study found out that 23% of the respondents either have PCOS or have suffered in past from PCOS. The present study not only found the physiological and psychological impacts of PCOS but also, it's diagnostic techniques and the most preferred form of treatment among respondents.

**Keywords:** *Polycystic Ovarian Syndrome, Lifestyle, Adolescent Female, Sleep Disorder, Balanced Diet, Anxiety*

**P**olycystic ovarian syndrome (PCOS) has been defined by the National Institute of Health and Rotterdam criteria as a hormonal disorder characterized by the presence of at least one polycystic ovary (presence of multiple cysts) accompanied by ovulatory

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dysfunction and excessive secretion of androgens. It is also called hyperandrogenic anovulation (HA) or Stein-Leventhal syndrome (Adali et al., 2008). PCOS is one of the most common endocrine disorders among women, producing symptoms in approximately 5 to 10% of women of reproductive age. The prevalence reported in earlier studies varies between 2.2% to 26%. These variations are due to difficulties in hormonal evaluation and lack of consensus on diagnostic criteria. For diagnosis of PCOS, ovarian ultrasonography and blood tests have to be done in the follicular phase. This limits large epidemiological studies in the community. Using different criteria, prevalence has been estimated as 4.0%–11.9% in the community from 3 different countries. There is paucity of data from India (Gill, Tiwari, & Dabadghao, 2012). Symptoms of PCOS are manifested mainly at the age when mate choice and marriage play an important role in women's lives; thus, changes in appearance and femininity are likely to mean an increased risk of psychological distress (Elsenbruch et al., 2003). The three most often mentioned and most embarrassing symptoms reported by these women are hairiness, dysfunction or lack of the menstruation cycle and infertility. As some symptoms cause changes that are visible to other people and interfere with the norms of femininity, this disorder often has a negative effect on individuals' mental health and well-being (Esler, Travers, Guttikonda, Dixon, & Lewis, 2007). Several studies indicated that dissatisfaction with body image might determine psychological functioning even in a healthy population. Persons affected by PCOS are exposed to multiple appearance-related challenges. For this reason, it is not surprising that these women score higher, compared to control groups on several measures of body image dissatisfaction adjusted for age and BMI index (Weiner, 2004). Dissatisfaction with body image had an explanatory value concerning depression and anxiety symptoms as well (Keegan, Liao, & Boyle, 2003). Based on the study of Elsenbruch et al., 2003, women with PCOS did not differ from others in the frequency of their sexual activity and sexual thoughts; however, they were less satisfied with their sexual life and found themselves less attractive compared to their healthy counterparts. The study also revealed that women with PCOS think that their partners find them less attractive and that their partners remain sexually unsatisfied while being with them. These results remained significant also after adjusting for BMI. Problems with sexual life are clearly associated with the external, visible aspects of PCOS that have inhibitive and negative effects on women's self-esteem and female identity (Elsenbruch et al., 2003). Former studies support that intensified hair growth, especially on well-observable areas, like one's face, causes the feeling of masculinity in women suffering from PCOS. They use masculine terms when describing themselves (e.g., beard, moustache) and look at their bodies as a failure of their femininity (Kitzinger & Willmott, 2002). So, it is natural to suggest that women with PCOS are at an increased risk of experiencing mood dysfunction and psychiatric problems. Hollinrake, Abreu, Maifeld, Van Voorhis, & Dokras, 2007 discussed that out of these depression and anxiety are most common. Anxiety disorders are a group of mental disorders characterized by feelings of anxiety and fear, where anxiety is a worry about future events and fear is a reaction to current events. The prevalence of anxiety in women with PCOS ranges from 34 to 57% yet again a higher prevalence than for women in the general population. Another qualitative study identified four recursive issues among women with hirsutism (Deeks, Gibson-Helm, & Teede, 2010). They felt "slaves of their own body"; they described their body as a "prison" and they used the word 'strange-eccentric' to describe their personality and "shameful" to describe themselves (Ekbäck, Wijma, & Benzein, 2009). In the study by Lipton, Sherr, Elford, Rustin, & Clayton, 2006, every third woman reported that the conspicuous hair growth on their face is constantly on their mind and that they continuously check themselves in a mirror. As these patients face a life-long problem due to the excessive hair growth, which causes constant misery, significant lifestyle changes (giving up former activities) and suicidal thoughts might also

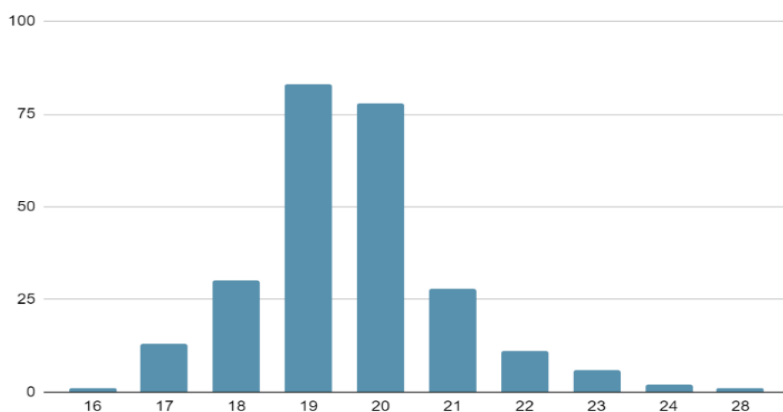
appear. The aim of current study was to find out the degree of prevalence of PCOS among the undergraduate students of Delhi University and other NCR colleges, since this age group caters to immense stress and anxiety due to their academic and career deciding burden. We wanted to analyse the psychological and physiological impact of PCOS that affects these young girls and their ability to cope with it.

### MATERIALS AND METHODS

We conducted this survey online by using Google Forms. The survey consisted of several questions dealing with PCOS, the family history of the patient, their lifestyle, the various symptoms they observed, the various kinds of diagnosis that were directed to them by the experts, the effect of PCOS on their physic and mental health and the different modes of treatment they followed to overcome the syndrome. The respondents were given an option to keep their input anonymous. The survey was conducted from 15 December 2022 to 28 February 2023. Total 257 responses were recorded from different regions of India. The questionnaire was divided into 5 segments. Out of the five segments, the first and second segment consisted of questions dealing with family history and lifestyle of the respondent. The third segment was about the symptoms that were visible to the patient. Fourth and fifth segment comprised of diagnosis and effects of PCOS and it was concluded with treatment of PCOS that is commonly being taken up by the undergraduate students. Keeping our respondents' convenience in mind, we kept the majority of the questions multiple choice. The Google Form with the survey questions was extensively distributed via email and other social networking sites, which aided in the distribution of our survey and increased its efficiency by generating a larger database of responses. The questions were designed so that we could conduct a thorough investigation of various features of PCOS among undergraduate students in the Delhi NCR. We utilized Microsoft Excel to construct the pie charts and bar graphs for quick and accurate comparison of diverse responses, resulting in effective data analysis, to analyse the data acquired through this online survey.

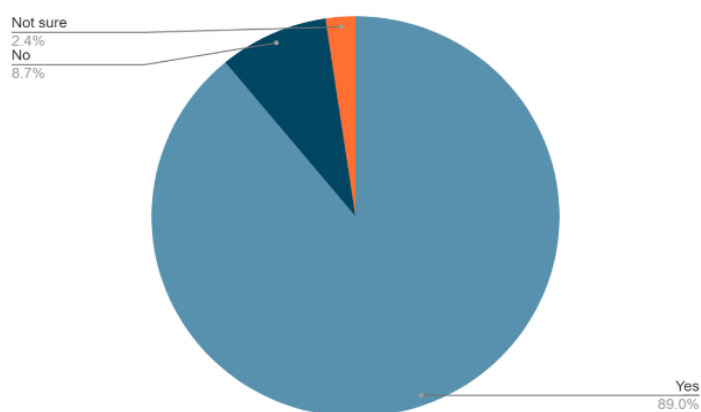
### RESULT AND DISCUSSION

Majority of the survey takers are either nineteen (32.4%) or twenty (30.5%) years old which is in accordance with the majority undergraduate students studying in Delhi University and other NCR colleges. Students aged eighteen (11.3%), twenty-one (10.9%) constitute the second major survey taking group.



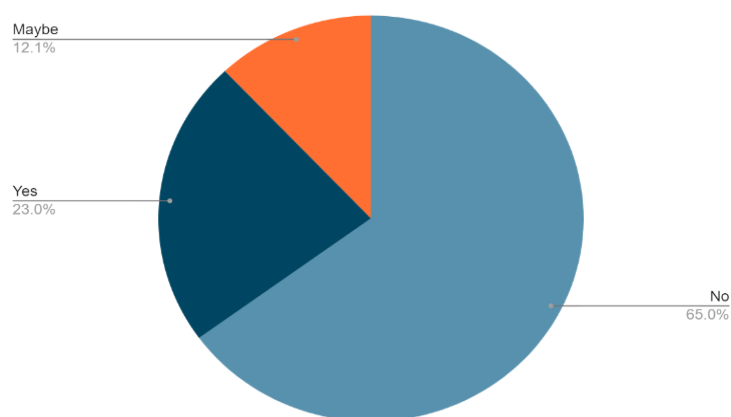
*Figure 1.1: Graph showing age of the respondents (in years).*

The increasing awareness about various disorders is apparent as a vast majority of students have heard about PCOS (89%).



**Figure 1.2:** Pie chart depicting how many respondents have heard about PCOS before.

23% students have suffered from PCOS in the past or are currently suffering whereas 12.1% survey takers are not sure if they had or have PCOS, which is evident of the ignorance in understanding the gravity of the symptoms and not going for proper diagnosis. Lack of awareness about PCOS has also been reported by a previous study conducted in South India (Jabeen et al., 2022).

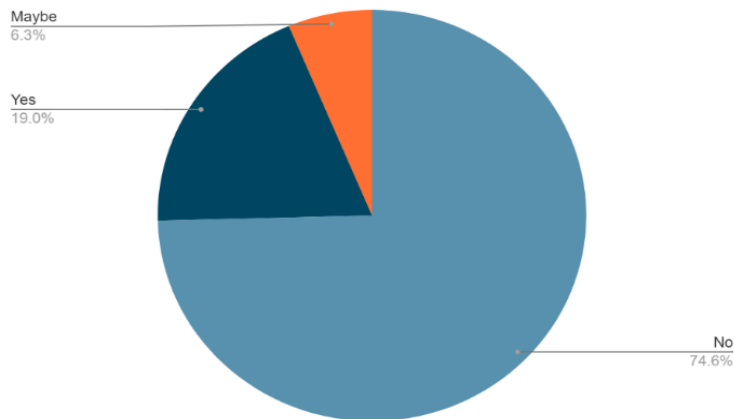


**Figure 1.3:** Pie chart showing the percentage of respondents who are suffering/ have suffered from PCOS.

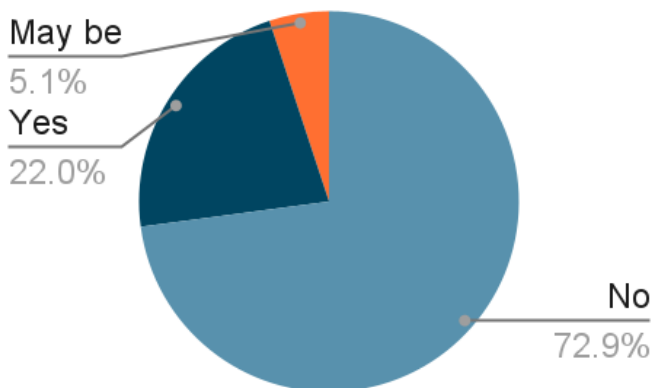
### **Family History**

Only 19% of the survey taker's family members have been diagnosed with PCOS in the past, and 6.3% participants are doubtful about the same. Amongst survey takers who are suffering or have suffered from PCOS in the past, 22% students have a family history of having PCOS whereas 5.1% are doubtful. Genetic variations are a major reason for PCOS (Heidarzadehpilehrood et al., 2022) (Ajmal, Khan, & Shaikh, 2019). Majority of students (72.9%) are first generation patients of PCOS. This is an indicator that PCOS is getting more frequent in the current generation of undergraduate students.

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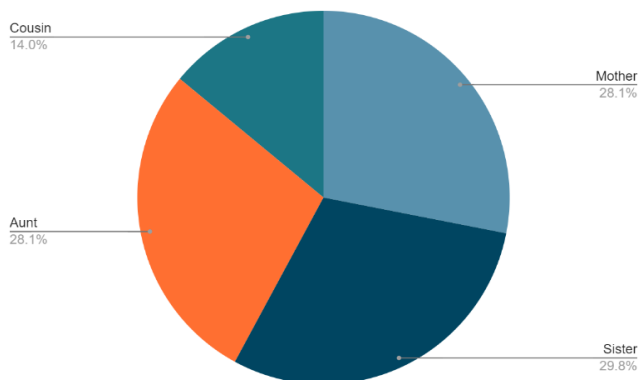


**Figure 2.1:** Pie chart showing the percentage of family members of the respondents affected from PCOS



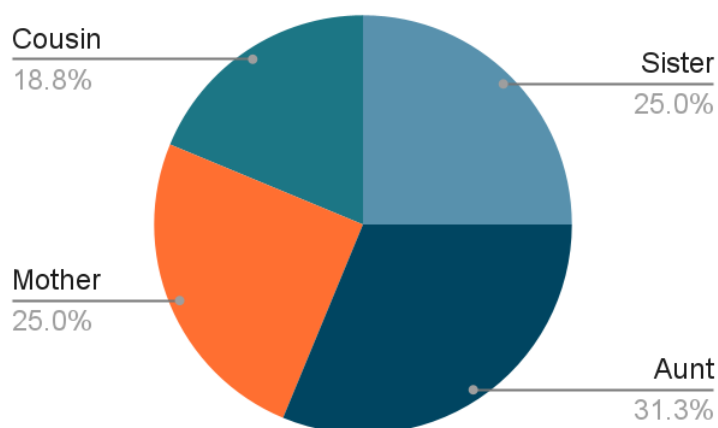
**Figure 2.2:** Pie chart depicting the percentage of family members of PCOS patients affected from PCOS

29.8% of survey taker’s sisters have PCOS. Additionally, 14% of the survey taker’s cousins have been diagnosed with PCOS. Another majority relationship affected is that of their mother which is constituting 28.1% and aunts constituting 28.1%.



**Figure 2.3:** Pie chart showing the relationship of respondents with the family members affected from PCOS

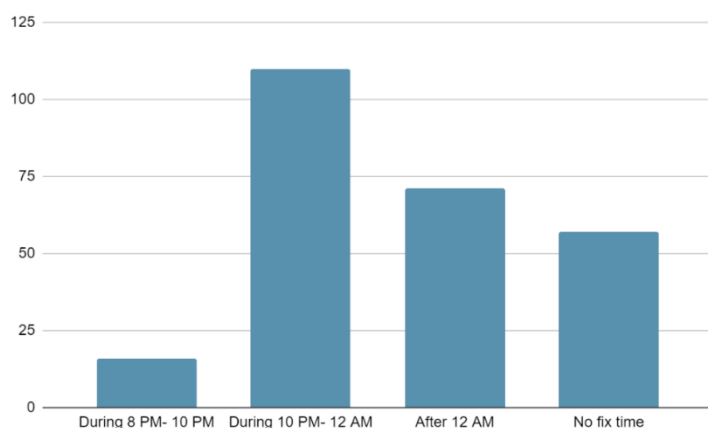
The most abundantly affected relationship amongst the students affected by PCOS is that with an aunt (31.3%) followed by mother and sisters (25% each).



**Figure 2.4** Pie chart showing the relationship of PCOS-affected respondents with the family members affected from PCOS

### **Lifestyle**

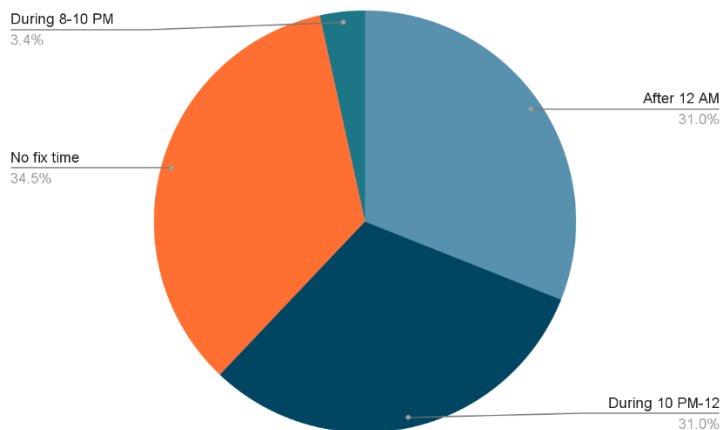
43.3% of the students go to sleep between 10 PM to 12 AM, and 28% of the survey takers go to bed after 12 AM. These trends in going to sleep late are extremely common in undergraduate students due to various reasons. 22.4% of the survey takers do not have a fixed sleeping time schedule. It has been confirmed in various studies that PCOS also leads to sleep disturbances (Szczuko et al., 2021), (Eisenberg et al., 2021).



**Figure 3.1:** Pie chart showing the time respondents go to bed

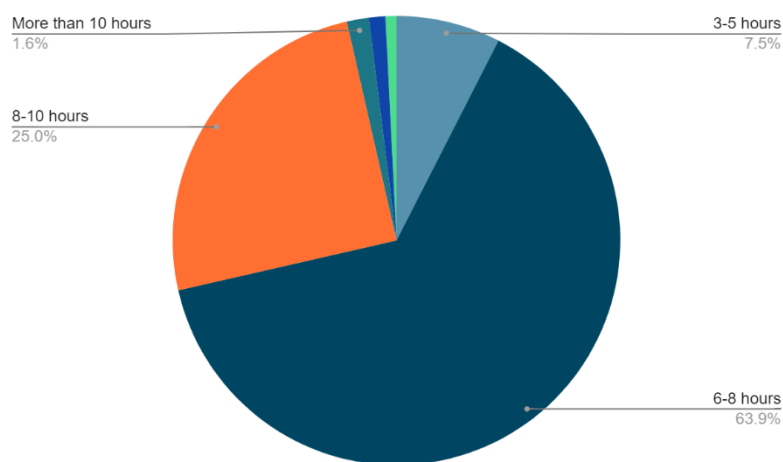
Most of the PCOS patients don't have a fixed time they go to sleep. There is an equivalent proportion of people who either go to bed between 10 PM to 12 AM and of those who go to bed after 12 AM.

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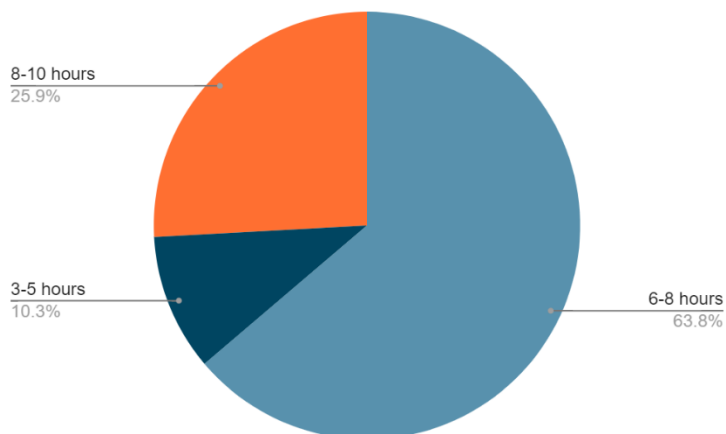
**Figure 3.2: Pie chart showing the time PCOS affected respondents go to bed**

Majority of students sleep for 6-8 hours a day.



**Figure 3.3: Pie chart showing the amount of hours that respondents sleep for in a day**

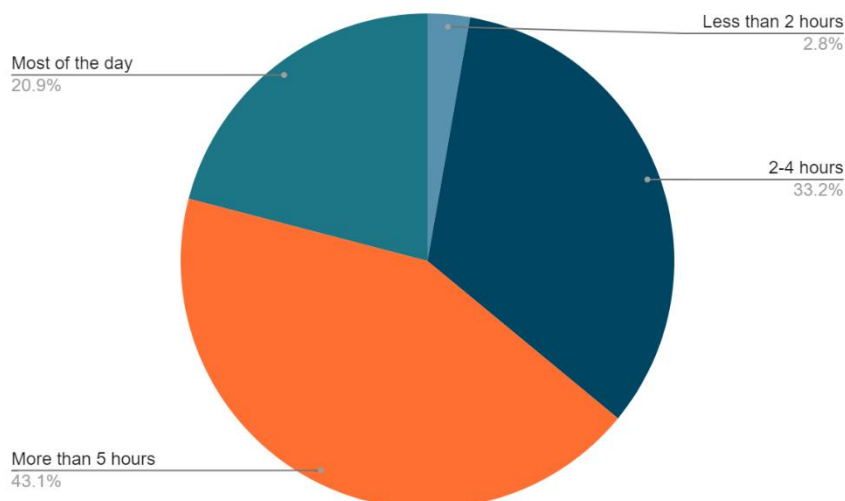
Nearly the same statistics are observed for the survey takers suffering from PCOS.



**Figure 3.4: Pie chart showing the amount of hours that PCOS affected respondents sleep for in a day**

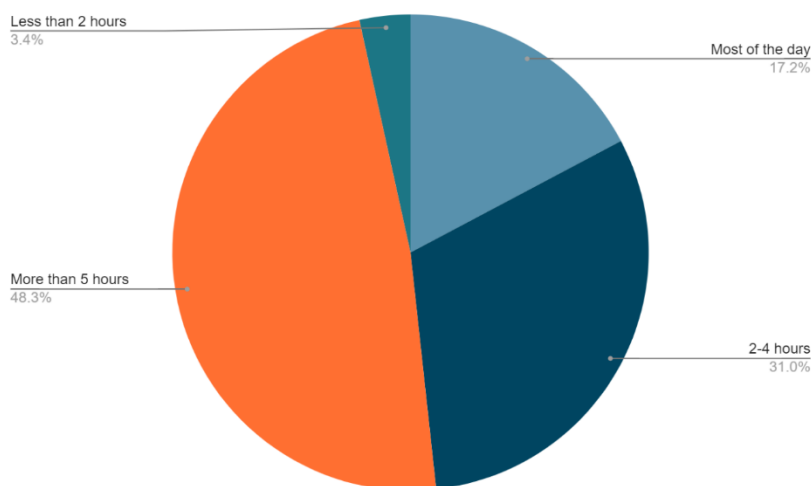
## Psychological and Physiological Impact of PCOS on the Undergraduate Students of Delhi University

Majority of students have a screen time of more than five hours everyday, some claiming to stay on screen most of the day.



**Figure 3.5:** Pie chart showing the amount of screen time of the respondents

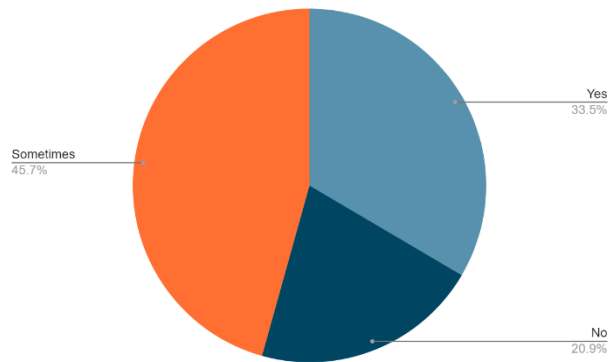
Survey takers suffering from PCOS also have estimated screen time of more than 5 hours on average.



**Figure 3.6:** Pie chart showing the amount of screen time of the PCOS affected respondents

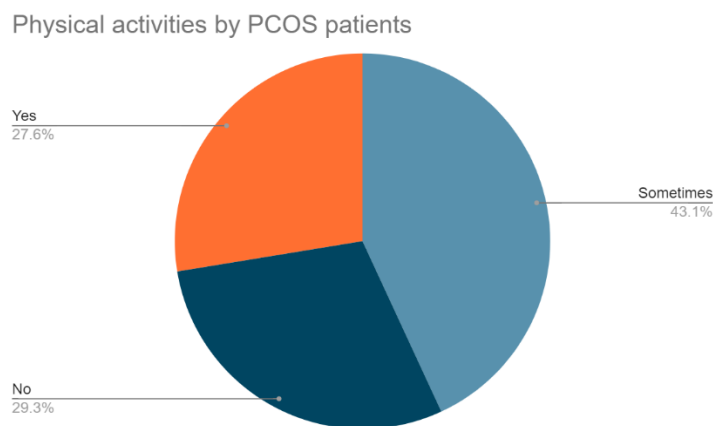
Majority of the survey takers perform physical activities sometimes, which is accompanied by no particular schedule. Physical exercise is crucial to balance weight and govern normal androgen production (Eisenberg et al., 2021).





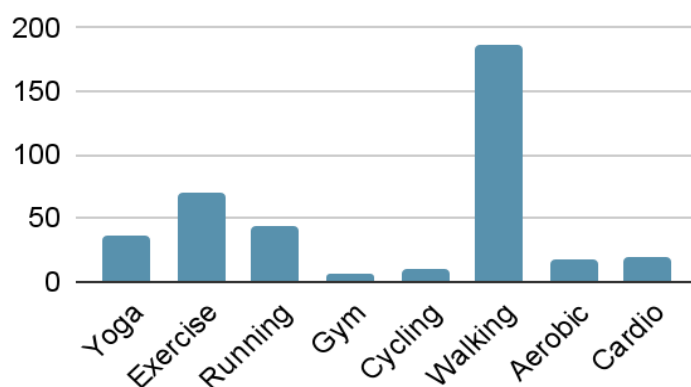
**Figure 3.7:** Pie chart showing the percentage of respondents who perform physical activities in a day

Survey takers suffering from PCOS also engage in physical activities sometime and 27.6% of them perform physical activities everyday.



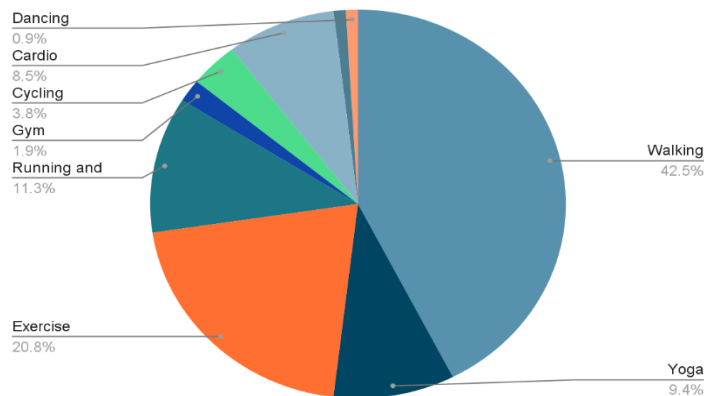
**Figure 3.8:** Pie chart showing the percentage of PCOS affected respondents who perform physical activities in a day

Majority of the survey takers walk on a regular basis. Primary reason for this can be because most of the out-station students live in paying guest accommodations or hostels nearby from where the college is on a walkable distance (Gu et al., 2022).



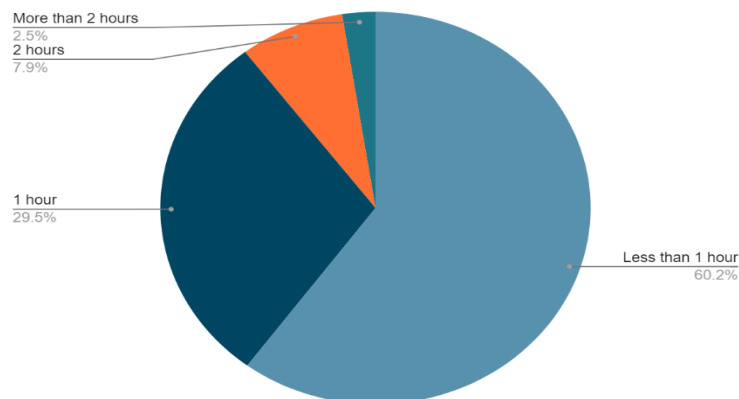
**Figure 3.9:** Pie chart showing the physical activities performed by the respondents in a day

42.5% PCOS patients commonly walk and do exercise.



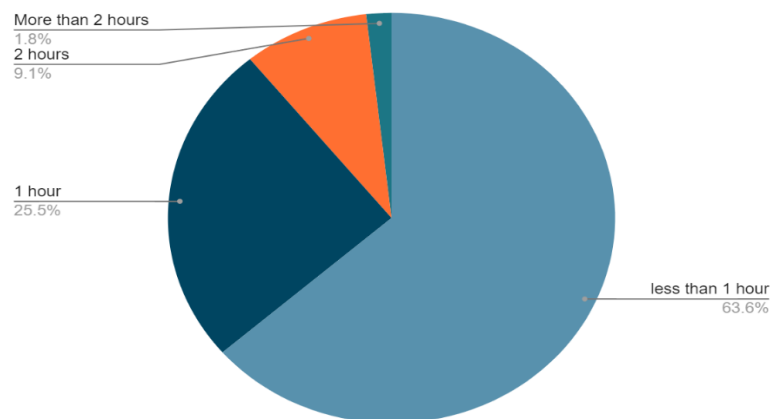
**Figure 3.10:** Pie chart showing the physical activities performed by the PCOS affected respondents in a day

Most of the survey takers engage in physical activities for less than one hour only.



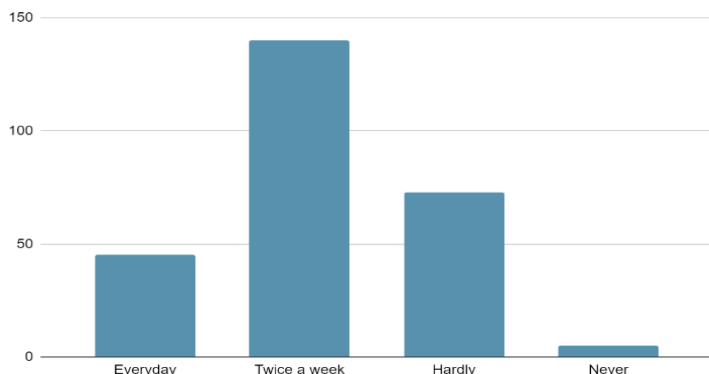
**Figure 3.11:** Pie chart showing the duration of physical activities performed by the respondents in a day

Most of the patients suffering from PCOS are surveyed to only be engaging in physical activities for less than an hour. Only 10.9% of patients perform physical activities for 2 hours or more.



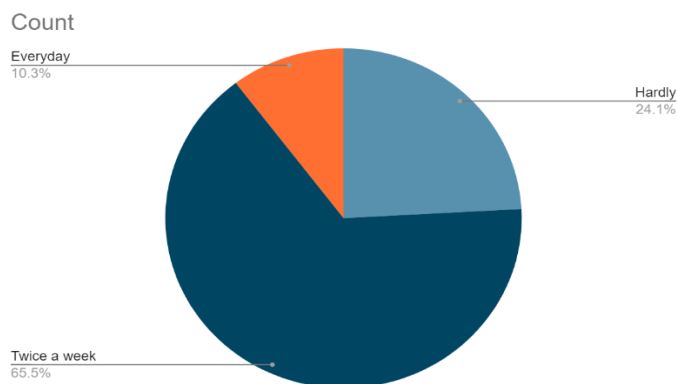
**Figure 3.12:** Pie chart showing the duration of physical activities performed by the PCOS affected respondents in a day

Majority of students consume junk food at least twice a week. Junk food usually doesn't contain nutrients as much as required by our bodies. In the study done in mice with PCOS, it was reported that dietary macronutrient balance can prove to be an appealing therapeutic approach to PCOS (Rodriguez Paris et al., 2020; Shabbir et al., 2023).



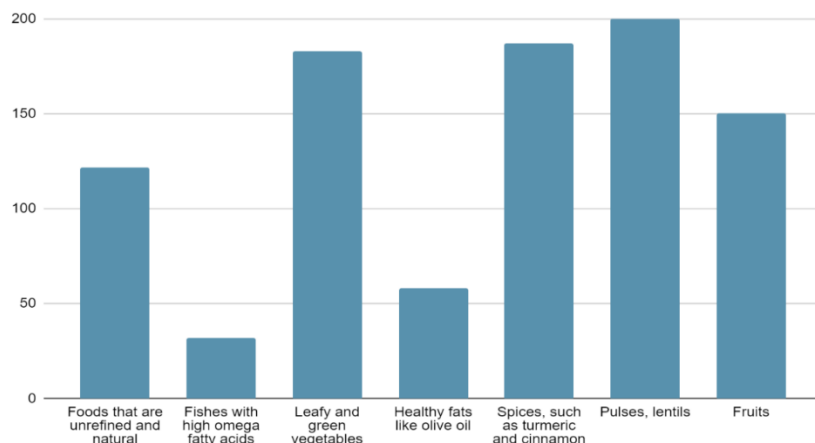
**Figure 3.13:** Graph showing the frequency of consumption of junk food by the respondents

Most of the survey takers suffering from PCOS are consuming junk food at least twice a week.



**Figure 3.14:** Pie chart showing the frequency of consumption of junk food by the PCOS affected respondents

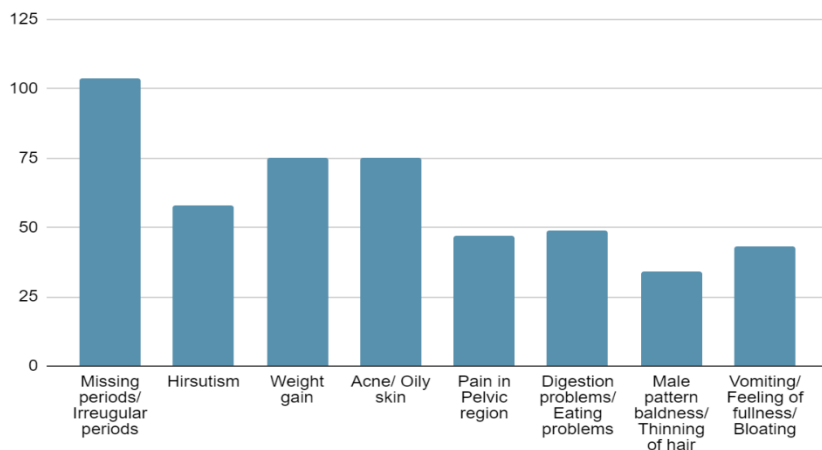
Majority of people consume pulses, spices, and leafy green vegetables.



**Figure 3.15** Graph showing the dietary inclusions of the respondents

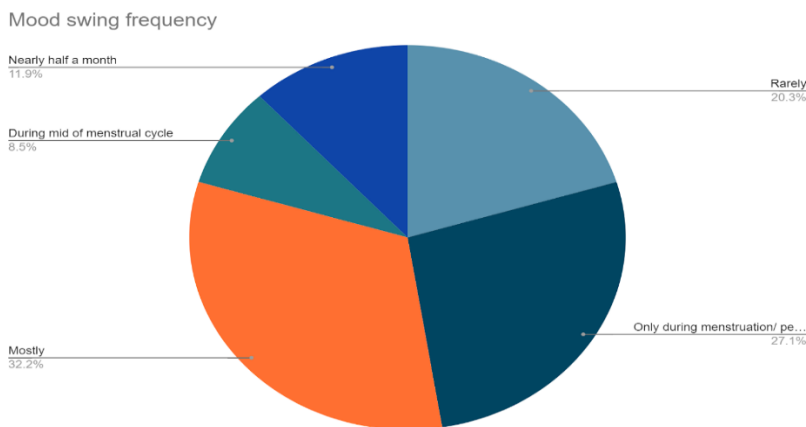
**Symptoms**

The most commonly surveyed symptom is missing or irregular periods. Weight gain and acne prone oily skin are the next most common symptoms.



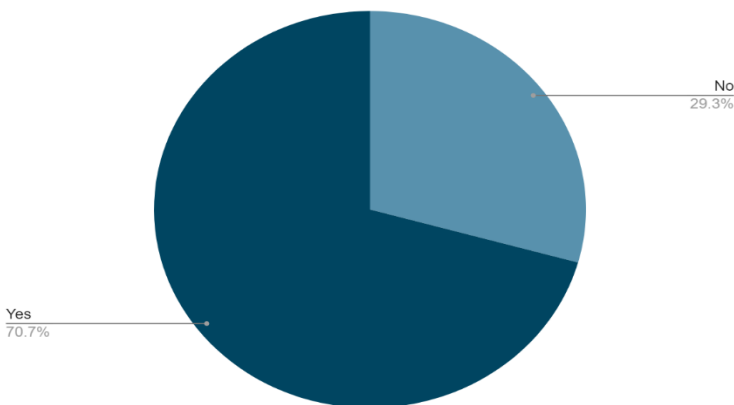
**Figure 4.1: Graph showing the most common symptoms of the respondents**

32.2% students suffering from PCOS mostly experience mood swings. Whereas 27.1% students only experience mood swings during periods.



**Figure 4.2: Pie chart showing the mood swing frequency of the patients.**

70.7% of the students suffering from PCOS suffer from acne/pimples.



**Figure 4.3: Pie chart showing patients suffering from skin related issues.**

25% of the students suffer from highly inflammatory lesions predominant, variable number of pustules, and many nodulocystic lesions. Amidst another 25% of students, inflammatory lesions are more apparent.

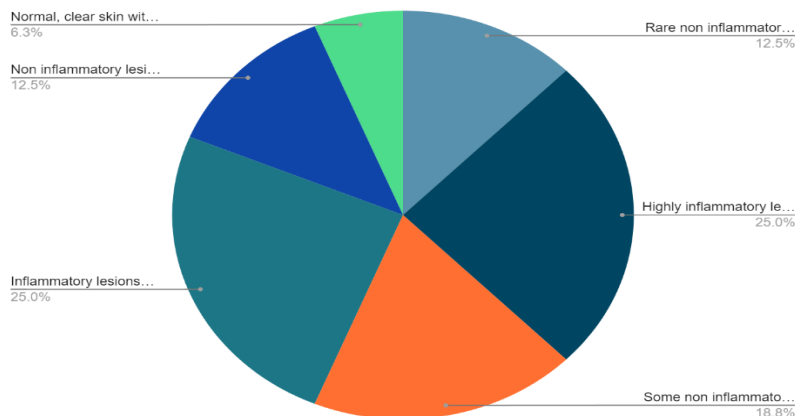


Figure 4.4: Pie chart showing inflammations of the patients.

55.8% of students have experienced sudden or drastic increases in weight. Whereas 11.6% of students experienced sudden weight loss.

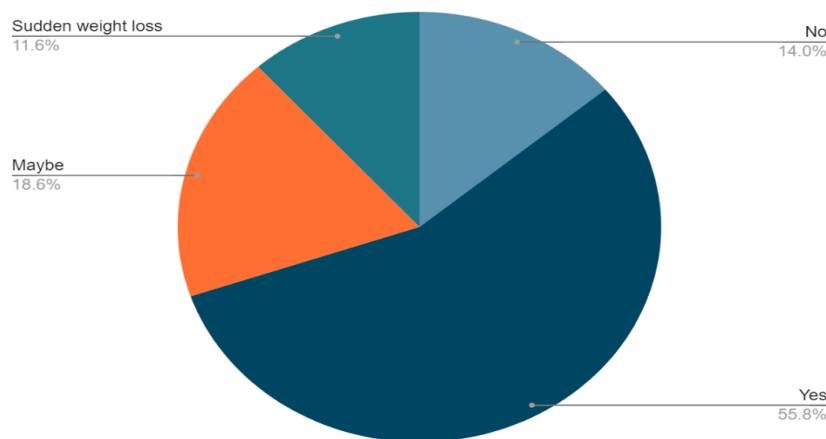


Figure 4.5: Pie chart showing weight loss frequency of the patients.

Different trends in the patterns of hair growth are observed in students.

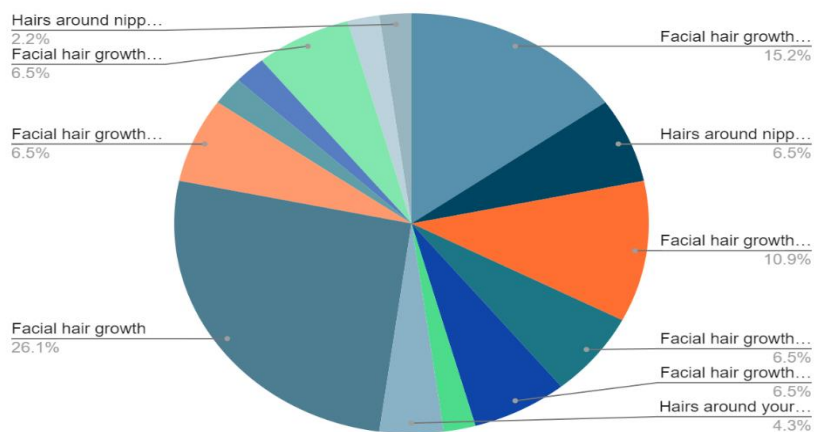


Figure 4.6: Pie chart showing the different patterns of hair growth in patients.

Facial hair growth is the most commonly observed pattern of excess hair growth with 13.7% of people having male-like beard. Hair around the belly button is the second most common area for excess hair growth.

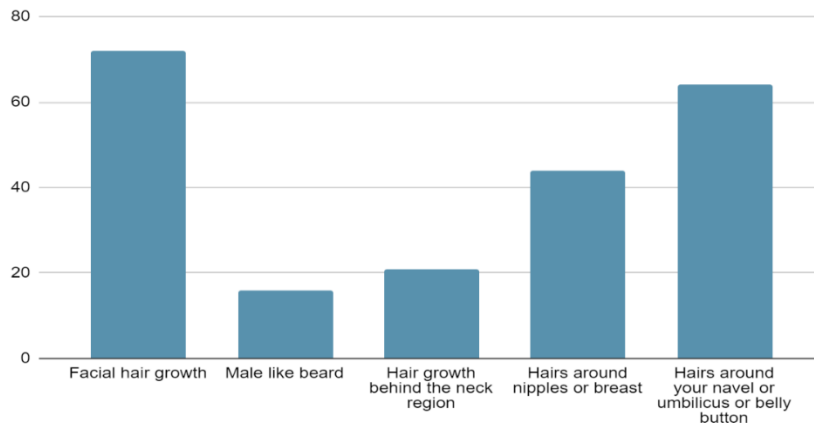


Figure 4.7: Graph showing facial hair growth patterns in patients.

**Diagnosis**

**Complications and consequences after diagnosis test**

According to the survey, the most common consequence of this disease was difficulty and complications in conceiving in the future and almost all the survey takers were warned about this complication by their doctor after the diagnosis was performed. Other consequences include thyroid (about 39%), diabetes (30.5%), heart diseases (10.1%) and obesity (4%). Some (18.3% of the respondents) even have the chance to develop Cancer in the uterine lining (known as endometrial cancer). Most respondents face the risk of more than one consequence, so we can infer that these consequences might be related to each other. According to a review done on the long-term consequences of PCOS, 60% of women with PCOS exhibit obesity. More than 20% of obese PCOS women are said to have impaired glucose tolerance. There is proof that women with PCOS have a 7 times greater prevalence of type 2 diabetes. The greater prevalence of type 2 diabetes in PCOS is hypothesised to be caused by insulin resistance and abdominal fat (Daniilidis & Dinas, 2009). PCOS can lead to high blood pressure and high cholesterol which can result in heart diseases and stroke. It was also found that Preeclampsia/eclampsia, peripartum cardiomyopathy, and heart failure during labour and delivery hospitalisations were more common in women with PCOS (Zahid et al., 2022).

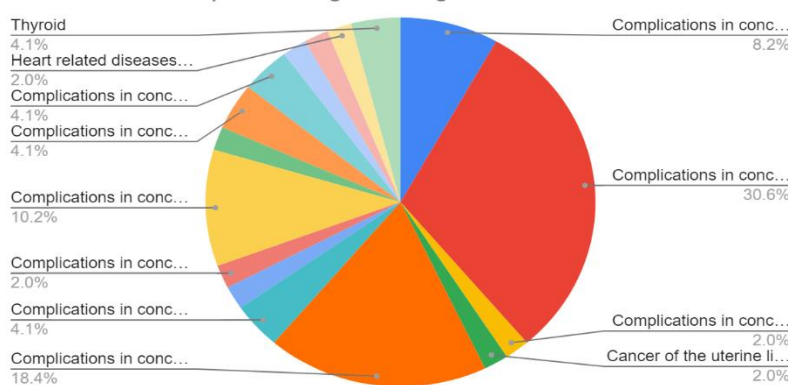
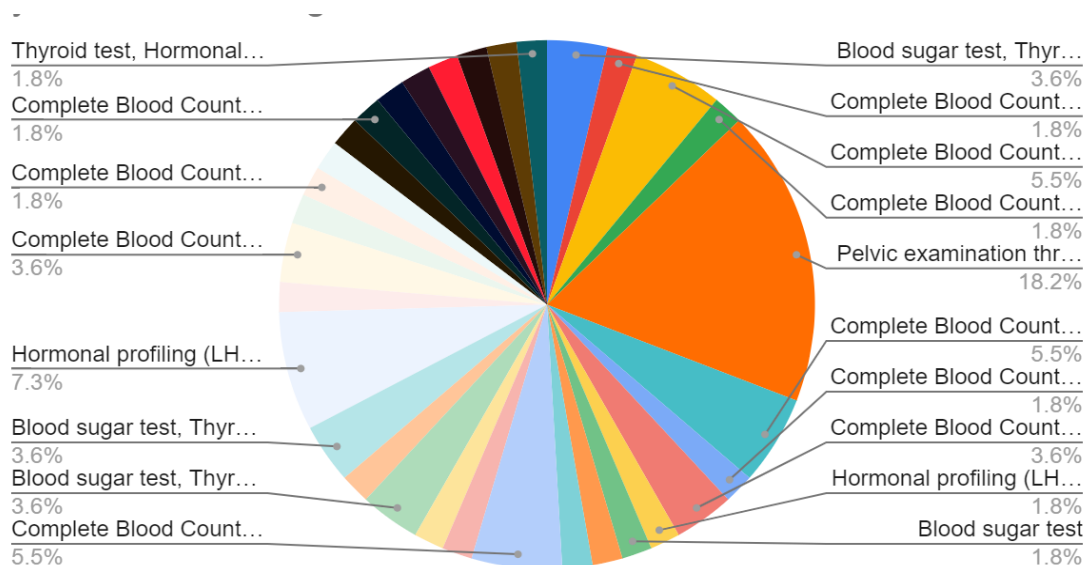


Figure 5.1: Pie chart showing complications and consequences after diagnosis.

**Tests for diagnosis of PCOS**

According to the majority of the survey takers, doctors recommended them to go for pelvic examination through ultrasound. 69.1% of the survey takers were recommended to get ultrasound of their full abdomen or lower abdomen at regular interval to check the condition of the cyst in the ovaries. Other diagnosis tests that are recommended by doctors are complete blood count (CBC) test, blood sugar test, hormonal profiling for LH, FSH, PRL and testosterone level, test for vitamin D3 Etc. According to specialist society recommendations, the presence of at least two of the following three conditions—chronic anovulation, clinical or biological hyperandrogenism, and polycystic ovaries—is required for the diagnosis of PCOS (Rasquin Leon, Anastasopoulou, & Mayrin, 2023). Two of the three Rotterdam criteria—oligoovulation or anovulation, excessive androgen activity, and polycystic ovarian morphology—must be present in order for a patient to be diagnosed with PCOS (Meczekalski et al., 2023). The prevalence of PCOS in the population has increased due to diagnostic criteria. Perhaps more significantly, the diversity across the now-multiple phenotypes of PCOS undermined the objectives of better classification: advancing research on the underlying pathophysiology and dangers of the diagnosis, as well as therapy suggestions for specific patients (Christ & Cedars, 2023).



**Figure 5.2: Pie chart showing commonly recommended tests by the doctors for diagnosis.**

**Results of the diagnosis**

The result of the diagnosis tests for most of the respondents showed the presence of multiple small follicles in ovary/ovaries. Another common result was the high testosterone (androgen) levels. High BMI and low complete blood count was also shown by many survey takers. Some were also diagnosed with thyroid disorder and a few respondents (1.9%) also reported low BMI. The main characteristic of PCOS is hyperandrogenism, which has been linked to a variety of physiological dysfunctions. For instance, excess androgens have been linked to cytokine hypersecretion, adipocyte proliferation, and signalling pathway dysregulation. Insulin resistance, which leads to abnormal glucose and fatty acid metabolism, is another important aspect of PCOS. The immune system also has a significant impact on PCOS. The usual balance of immune cells is upset by hyperandrogenism, which also suppresses some immune cells while stimulating others, leading to persistent inflammation. Due to the ovarian dysfunction, it causes, this low-grade inflammation may have a role in infertility (Shabbir et al., 2023). SCH was observed to make insulin resistance

and dyslipidemia worse in PCOS patients. Additionally, it was connected to hormonal disturbances that increased the infertility rates in the PCOS-SCH group. As a result, thyroid function in PCOS-afflicted women needs to be regularly checked and treated as necessary (Peddemul et al., 2022). In lean PCOS, it is found to have a positive correlation between ALT (Alanine aminotransferase) and BMI, white blood cell count, lymphocyte count, aspartate aminotransferase, uric acid, and total testosterone (Liu et al., 2023).

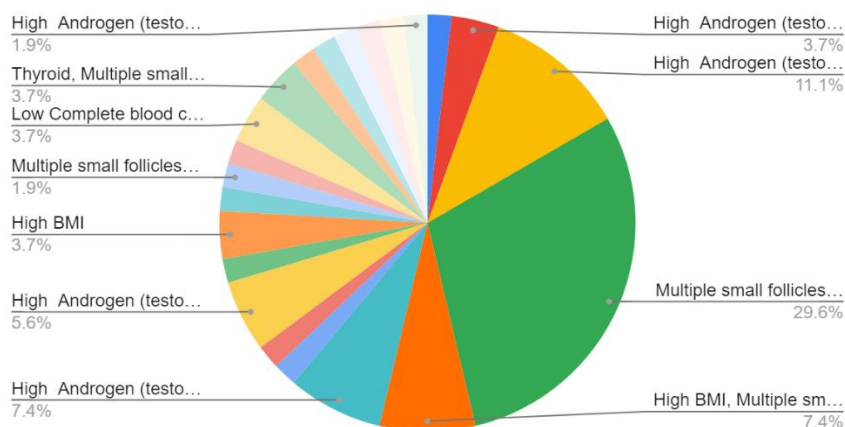


Figure 5.3: Pie chart showing most commonly diagnosed symptoms.

### Effects of PCOS

According to the survey conducted, 43.9% survey takers claimed to be tired when physically active. 31.6% of respondents felt tired all the time because of PCOS. About 16% felt tired throughout the day. Compared to women without PCOS, women with PCOS report feeling tired more frequently. Sleep and fatigue are inextricably linked, and women with PCOS are more likely than women without to experience poor sleep quality and sleep problems. In example, obstructive sleep apnoea (OSA) may affect up to 35% of women with PCOS, compared to 9–38% of the general population (Ee, Pirodda, Mousa, Moran, & Lim, 2021).

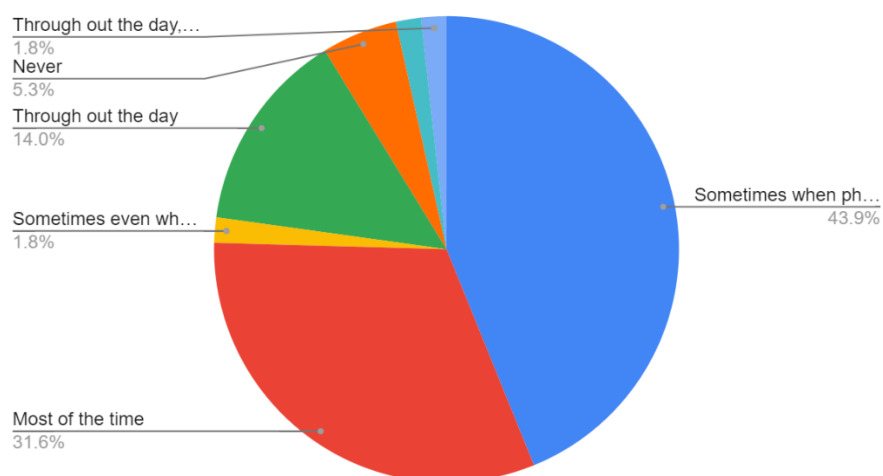


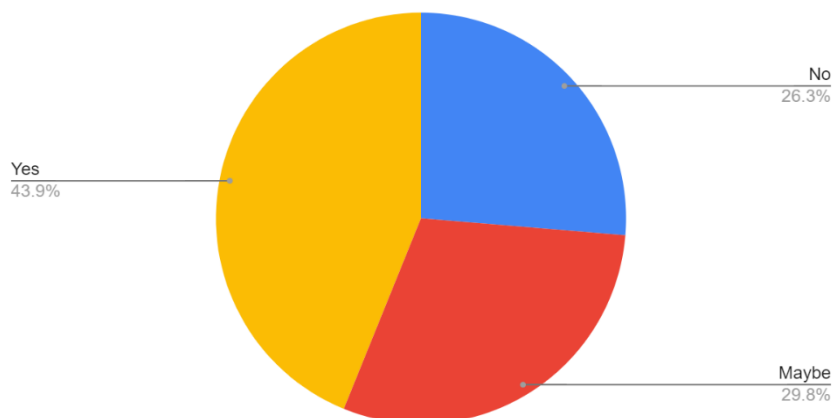
Figure 5.4: Pie chart showing how often the patient feels tired.

PCOS can also be linked to low self-esteem in women. 40.7% of the survey takers agreed that PCOS affects their self-esteem negatively sometimes, 31.5% claimed that it affected them most of the time and 14.8% felt this all the time. Rest did not agree to the statement.

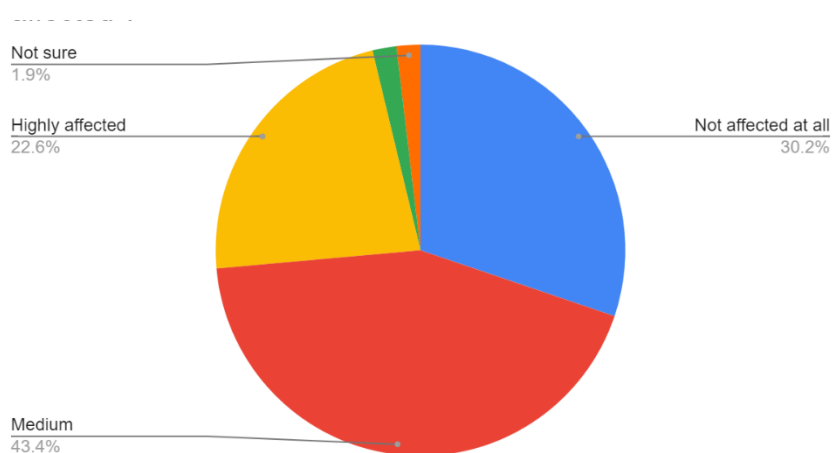


## Psychological and Physiological Impact of PCOS on the Undergraduate Students of Delhi University

Hormonal conditions like those that accompany polycystic ovarian syndrome (PCOS), where changes in appearance and needing to cope with a number of other issues emerge as a result of this illness, frequently have a negative impact on mental health (Dybciak et al., 2022). PCOS can also have effects on the patient's academic performance. According to the survey, 66.1% of the respondents agreed that PCOS affects their academics. This might be due to difficulty in learning and memorising things (agreed by 43.9% of the survey takers). Most of the respondents felt that this affected their academic performance at an intermediate level.



**Figure 5.5:** Pie chart showing how often the student experiences difficulty in learning and memorising, when suffering from PCOS.



**Figure 5.6:** Pie chart showing the level at which memorising skills are affected due to PCOS.

43.9% also claimed to feel depressed and stressed due to PCOS. People with PCOS are more likely to experience sadness and anxiety symptoms as well as cognitive impairment in some areas (Sukhapure et al., 2022). One of the most prevalent endocrine conditions in women, polycystic ovary syndrome can lead to worry, emotional suffering, and a lower quality of life (Salajegheh et al., 2023).

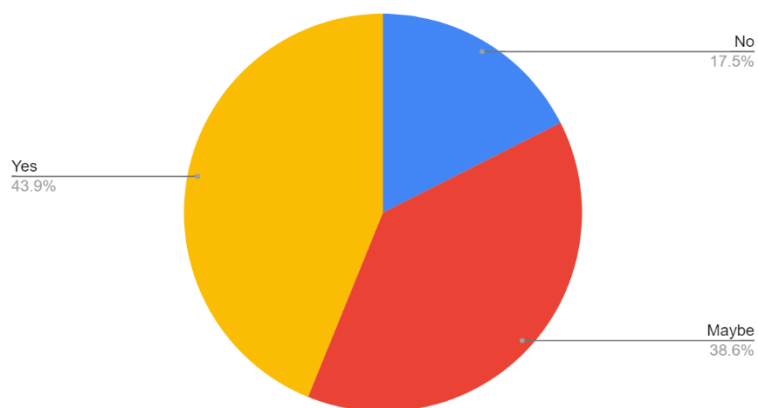


Figure 5.7: Pie chart showing the level of stress felt by the patients.

### Treatments of PCOS

#### Medical treatment taken:

According to 27% of the survey takers, they did not opt for any medical treatment. Out of those who took medical help, a major part, 39% of people took only allopathic treatment for PCOS. A survey conducted on 18–40 years old women diagnosed with PCOS at the Gynecology outpatient department, PGIMER, Chandigarh, also produced similar results. Allopathy is the preferred approach to treat PCOS in line with the current health culture of ‘pill fixation’ via which patients tend to look for quick relief [1]. About 6.8% of the survey takers chose only ayurvedic treatment methods. A higher percentage of people, about 8.5% opted for homeopathic. The rest of the statistics show some smaller groups of people taking a combination of either two of the above treatments or all of them. In the above-mentioned survey in PGIMER also, around 60% of surveyees consulted three or more kinds of treatments for treating their PCOS (Allopathy or Indigenous) (Kaur, Suri, Rana, & Singh, 2021).

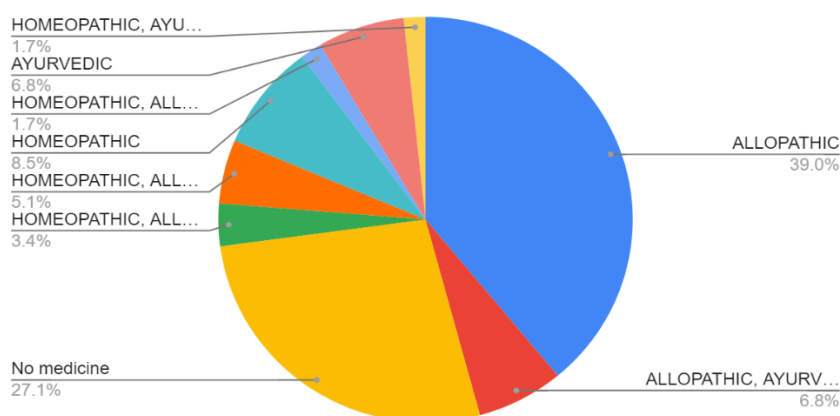


Figure 6.1: Pie chart showing most trusted way of treatment.

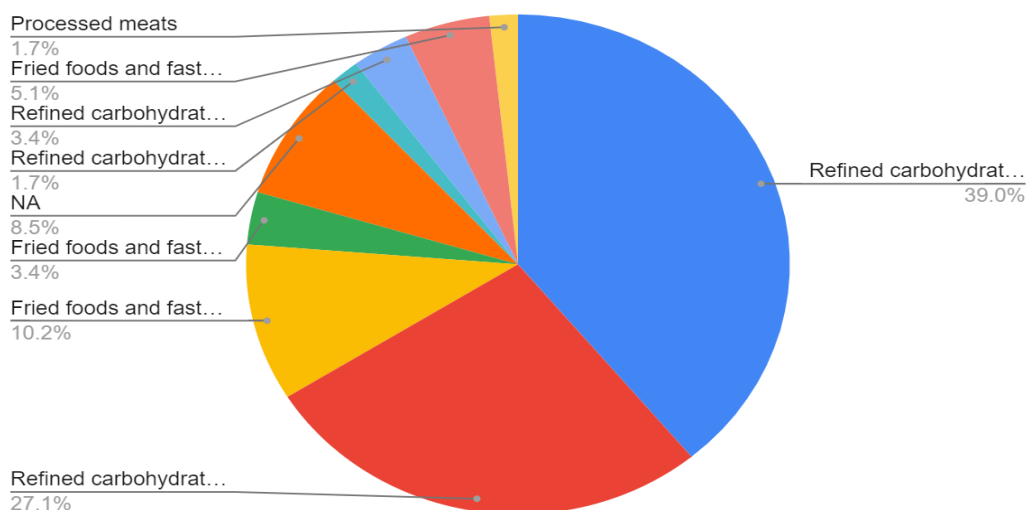
#### Diet advised to be taken:

Out of the survey takers, the most common diet advised to be taken consisted of foods that are unrefined and natural. Leafy and green vegetables and healthy fats like olive oil were the next set of food choices people were advised to take. Most of the people were advised to take a combination of many healthy things and try to include them in their diet. Low glycemic index carbohydrates should be kept at top priority in diet; they include foods and

vegetables like broccoli, lentils, bran cereals, whole-grain bread, etc. An ideal diet would be rich in fibers and low in saturated fats and carbohydrates (Sadeghi et al., 2022).

**Diet advised to be avoided:**

Most of the survey takers, about 39%, were advised to avoid refined carbohydrate sources, fried foods and fast foods, carbonated beverages and processed meats. These are all sources of either high sugar content, or other chemically processed foods which can further aggravate the condition of PCOS. The intake of saturated fatty acids, present in processed food, plays a role in intensifying PCOS by producing an inflammatory status and reducing insulin sensitivity (Sadeghi et al., 2022). According to a review paper published in 2022, women dealing with PCOS, should be aware that foods with a high glycemic index like, white rice, cookies, fries or chips, are to be avoided at any cost (Sadeghi et al., 2022). Around 8.5% of the respondents were not advised to avoid any kind of food.



**Figure 6.2: Pie chart showing most commonly avoided diet recommended.**

**Lifestyle changes prescribed by doctor or opted themselves:**

About 41% of the surveyees were prescribed or opted for lifestyle changes including balanced diet, yoga and exercise, proper sleep and minimized screen time. A balanced diet was one of the highest prescribed lifestyle changes among the people pointing at the fact that unhealthy and junk foods are a major contributor to PCOS. According to a review paper published in the Journal of Food Biochemistry, it has been advised that a balanced diet with 40% energy from carbohydrates, 30% from fats, and 30% from protein with optimum physical activity can reduce extreme PCOS symptoms and improve overall metabolic balance of the body (Shahid et al., 2022). In a research conducted by Shrivastava et al., it is deduced that yoga mainly improves reproductive functions by decreasing stress and balancing the neurohormonal profile (Shrivastava, Mishra, Singh, & Shrivastava, 2022). About 6.9% were not prescribed for any such change or didn't opt for either.

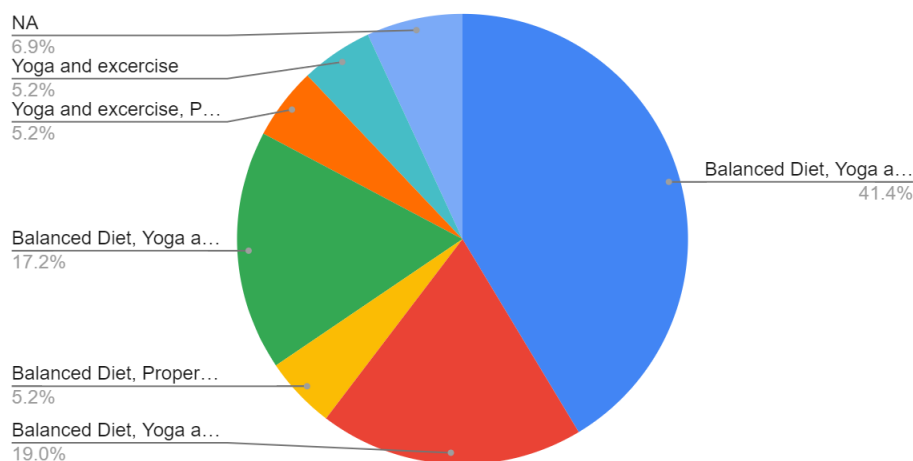


Figure 6.3: Pie chart showing most commonly avoided diet recommended.

**Herbs/home remedies taken:**

Majority of the participants did not take any home remedies or herbs for treating their PCOS. Out of those who took, the highest percentage of people opted for green tea in their daily lives. Various herbal extracts have been proved to show a tangible relation in reducing the symptoms associated with PCOS (Shahid et al., 2022). Including herbal infusions would be a very good complement to the treatment, according to a review paper, such as cinnamon (*Cinnamomum verum*) and green tea (*Camellia sinensi*) (Szczuko et al., 2021).

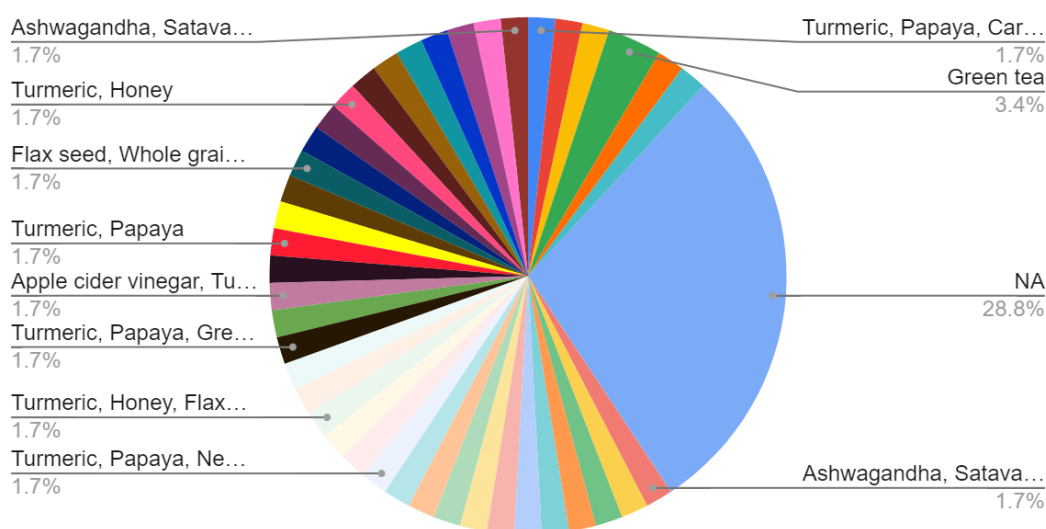


Figure 6.4: Pie chart showing most commonly avoided diet recommended.

**Best treatment methodology as per the respondents**

**Medications prescribed by doctor:**

A majority of the surveyees, 30.5% have not been prescribed any medications by the doctor they had visited. Out of the respondents who were prescribed specific medicines, around 20.3% were advised to have oral contraceptives/ combination birth control pills. The remedy which was prescribed the most after them was Metformin (8.5%). Metformin is usually prescribed to restore the ovulation cycle in women dealing with PCOS because of its insulin sensitivity-increasing properties (Sadeghi et al., 2022).

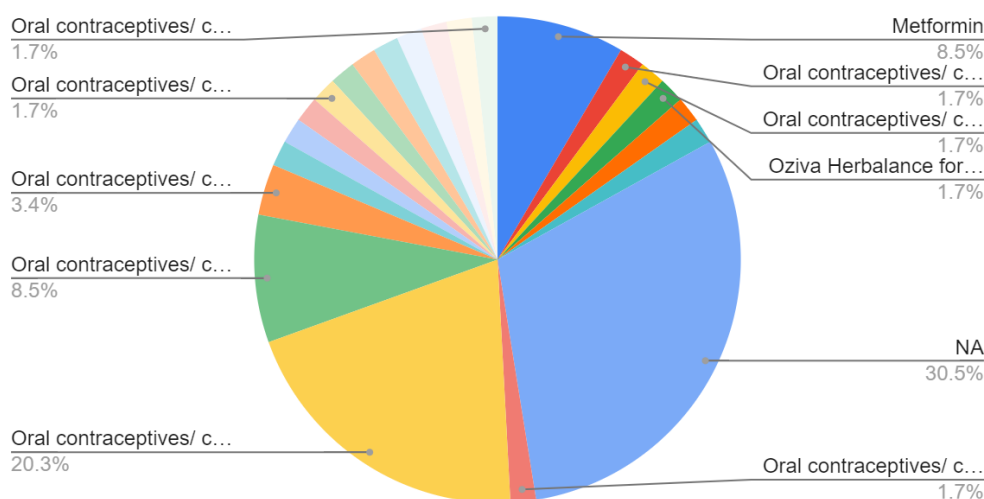


Figure 7.1: Pie chart showing most commonly prescribed medicine.

**Most preferable approach to deal with PCOS:**

The most preferred approach to deal with PCOS according to the respondents was a combination of Yoga and exercise, Herbs and home remedies and a Balanced diet (Szczuko et al., 2021). Around 7% of the surveyees each prefer homeopathic and allopathic treatment only. Most of all the other participants felt a variety of treatments and adopting a holistic lifestyle helped in treatment of PCOS. Several studies show that exercise, with or without being on a diet, can resume ovulation in women with PCOS (Sadeghi et al., 2022).

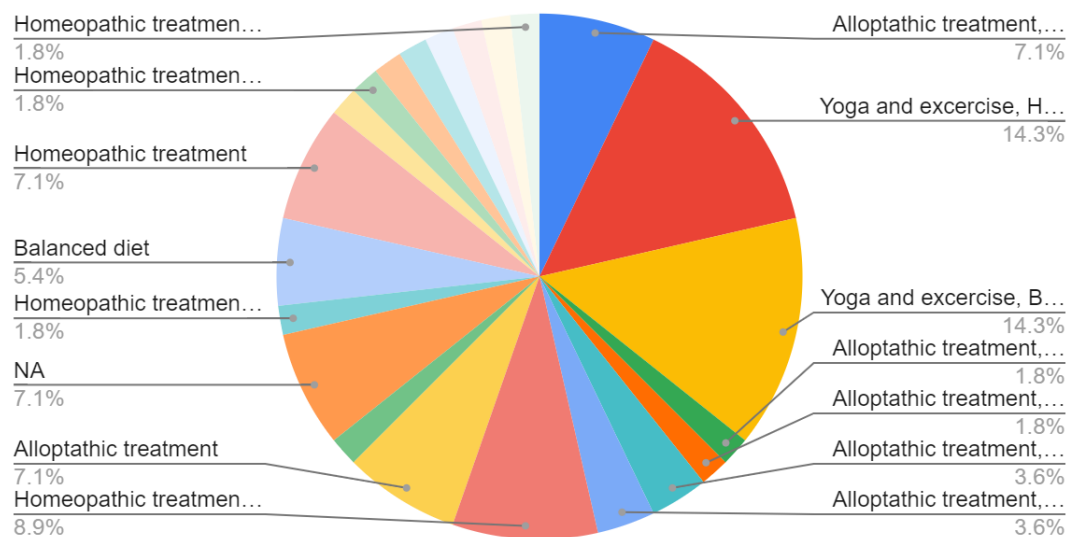
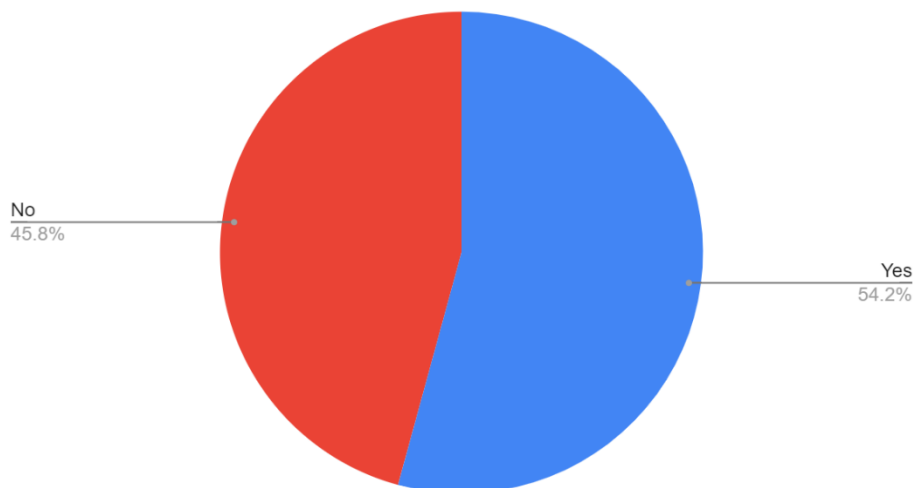


Figure 7.2: Pie chart showing most preferred approach by the patients.

**Is Medicine effective in treatment:**

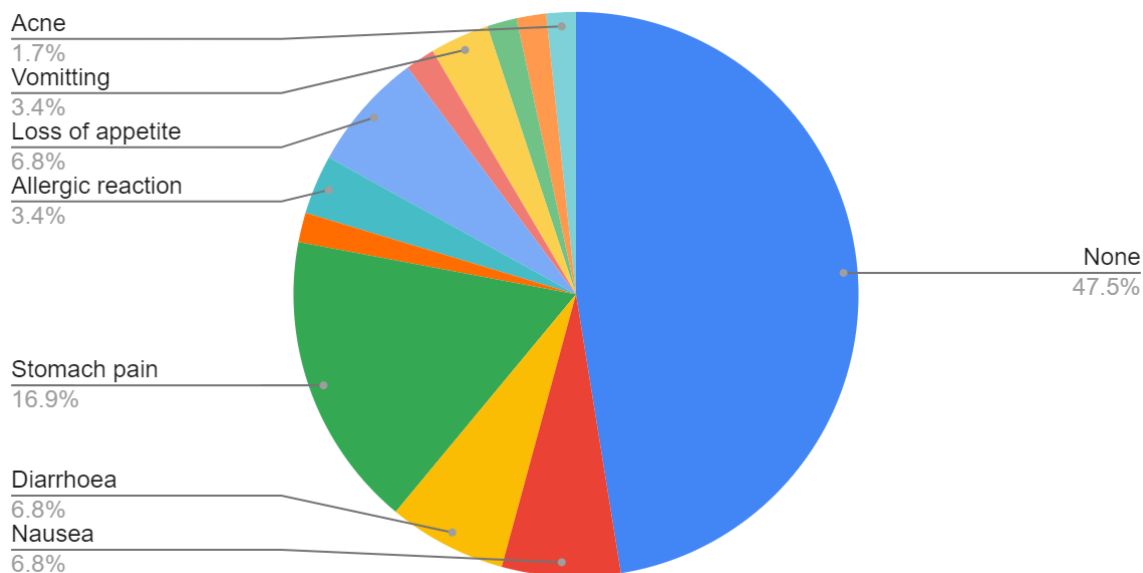
More than half of the survey takers, 54.2% feel medicines are effective in treating PCOS.



**Figure 7.3:** Pie chart showing preference for medicine.

**Adverse effects of medications:**

Approximately half of the participants of the survey did not experience any adverse effects of the medications of PCOS. Out of the other half, who did observe some side effects, stomach pain (16.9%) was the most common, followed by loss of appetite, nausea and diarrhea, each experienced by 6.8% of the surveyees. Other side effects that came across included acne, allergic reactions, joint pain and constipation. Metformin causes nausea and vomiting in the first few days which may not go well with all patients leading to abandonment of the therapy (Sadeghi et al., 2022).

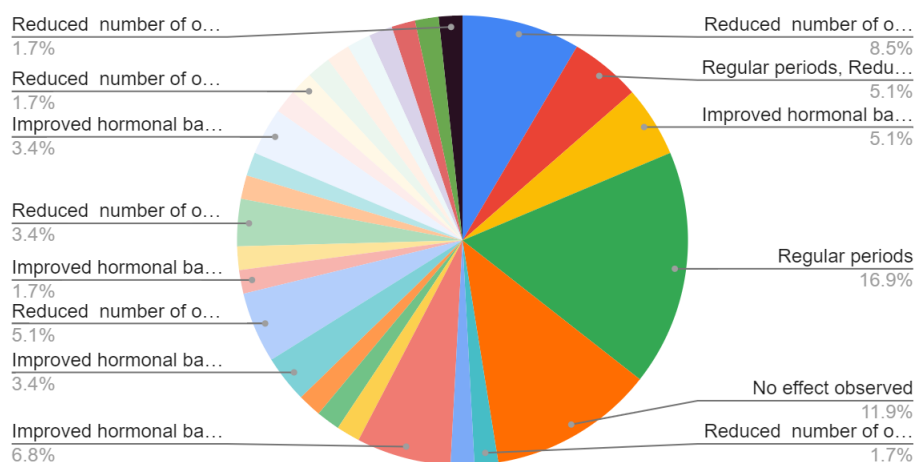


**Figure 7.4:** Pie chart showing common adverse effect due to the medication.

**Extent at which medications helped in the treatment:**

16.9% of the participants felt that the medicines helped in getting more regular periods than before. Other than this, improved hormonal balance and reduced number of ovarian cysts were the effects the respondents observed after taking the prescribed medicines.

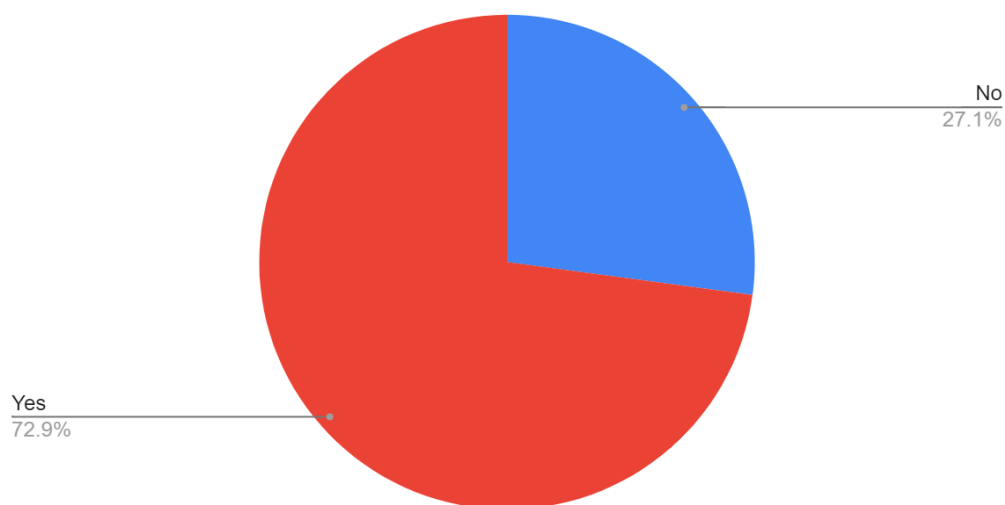
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**Figure 7.5: Pie chart showing effectiveness of medications.**

### Experience symptoms after medications or not:

Almost 75% of the participants sense that they experience reduced symptoms of PCOS after starting the medications.



**Figure 7.6: Pie chart showing reversion of symptoms after stopping medicine intake.**

## CONCLUSION

Polycystic ovarian syndrome (PCOS) has been an emerging disease among adolescent female. It's symptoms like hirsutism, obesity, irregular menstrual cycle might lead to many physiological and psychological distress among the females. This research focuses mainly on undergraduate females of Delhi university and NCR colleges because this age group is vulnerable to psychological distress regarding the career, academic pressure, peer pressure and a vast section of students relocate from their hometowns to Delhi and NCR for further studies which again makes them more vulnerable to psychological distress and It has been found through this research that students with PCOS are more prone to psychological distress than the ordinary students. They become less confident and also face distraction in academics due to the symptoms of PCOS. The impact of PCOS on the quality of life of females is profound in every sphere of their life. This research successfully brings into light the relationship between physiological impacts of PCOS and psychological distress (depression and anxiety) among respondents due to PCOS. This survey-based research also

revealed that the most preferred approach to deal with PCOS according to the respondents was a combination of yoga and exercise, herbs and home remedies and a balanced diet. This research also took into account the cause of PCOS and only 22% of respondents have had any genetic predisposition for this syndrome rest were the first generation to have this syndrome proving the increasing risk for PCOS in the current time due to unhealthy lifestyle habits and changing environment. On the basis of this research, it is advisable for females in their early reproductive age to adopt a healthy lifestyle with yoga, exercise and balanced diet along with proper sleep cycle to avoid having PCOS and healthy lifestyle habits and several herbs are also helpful for the females with PCOS to minimise its symptoms along with proper medical care.

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### **Conflict of Interest**

There is no conflict of interest among the authors.

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