

KNOWLEDGE, AWARENESS, AND PERCEPTION OF POLYCYSTIC OVARY SYNDROME

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Pharmaceutical Management

By

Suman Rituraj

Under the Supervision and Guidance of

Dr. Sudhinder Singh Chowhan

2024

30-Jun-2024



To Whomsoever it May Concern

This is to certify that **Mr. Suman Rituraj** student of **MBA** from **IIHMR University** has successfully completed his training program with SH Pharma Ltd. In **Product Management team** from **01-April-2024 to 30-Jun-2024**.

He was found to be diligent, sincere & dedicated during his training period.

We wish his all the best for future endeavors.

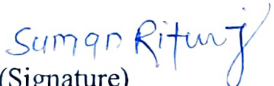
For SH Pharma Ltd.

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I hereby declare that this dissertation titled "KNOWLEDGE, AWARENESS AND PERCEPTION OF POLYCYSTIC OVARY SYNDROME" is the bonafide record of my original research

work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.


(Signature)

Suman Rituraj

Date- 08/07/2024

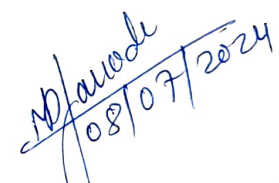
CERTIFICATE

This is to certify that dissertation titled KNOWLEDGE, AWARENESS AND PERCEPTION OF POLYCYSTIC OVARY SYNDROME is a record of the research work undertaken by Suman Rituraj in partial fulfillment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

A handwritten signature in blue ink, appearing to read 'Sudhinder Singh Chowhan', with the date '8/7/24' written below it.

DR. SUDHINDER SINGH CHOWHAN
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IIHMR University, Jaipur

Date 08/07/2024

A handwritten signature in blue ink, appearing to read 'Manthan D. Janodia', with the date '08/07/2024' written below it.

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ABSTRACT

Title: KNOWLEDGE, AWARENESS AND PERCEPTION OF POLYCYSTIC OVARY SYNDROME

Author Name: Suman Rituraj

Advisor Name: Mr. Venkat Ramana

Keyword: PCOS, Polycystic Ovary Syndrome, Treatment Patterns, Therapeutic Strategies, Pharmaceutical, Women's Health

Background-

This study investigates the Knowledge, Awareness, and Perception (KAP) of Polycystic Ovary Syndrome (PCOS) among a sample of participants in India. PCOS is a complex endocrine disorder affecting women of reproductive age, characterized by hormonal imbalances and ovarian cysts. The research aims to assess the understanding of PCOS symptoms, risk factors, diagnostic methods, and management strategies among participants.

Objective-

- ✓ *Study to determine the Knowledge, Awareness, and Perception (KAP) of students about polycystic ovarian syndrome.*
- ✓ To investigate adherence to prevention guidelines related to PCOS among students.

Methodology:

This descriptive study utilized a questionnaire administered to 138 participants across India. Primary data was collected through the questionnaire, supplemented by secondary data from literature and reference sources. Statistical analysis was conducted using MS Excel to present findings quantitatively.

Results:

The study revealed a significant familial predisposition to PCOS among participants, indicating a heightened risk within affected families. Despite this genetic link, there was widespread non-adherence to preventive practices and varying levels of awareness about PCOS. Many respondents lacked comprehensive knowledge of symptoms, risk factors, and treatment options, underscoring the need for targeted educational initiatives.

Conclusion:

Our analysis of Polycystic Ovary Syndrome (PCOS) data reveals significant familial history among respondents, indicating increased future risk. Despite this, there is poor adherence to preventive practices, necessitating targeted education for early detection and management. Our Knowledge Assessment Test shows varied awareness levels; comprehensive education is vital. We found gaps in monitoring tools and lifestyle adherence, underscoring the need for ongoing support. We recommend regular PCOS-focused health programs to enhance awareness and promote proactive management. Addressing knowledge gaps and improving awareness are crucial for better PCOS outcomes, fostering supportive healthcare environments for affected individuals.

Keywords: - PCOS, Polycystic Ovary Syndrome, Treatment Patterns, Therapeutic Strategies, Pharmaceutical, Women's Health, Hormonal Therapy, Insulin Sensitizers, Risk Factors, Measurement, Treatment, Preventive Practices, Awareness Campaigns, Lifestyle Changes, Genetic Factors

ACKNOWLEDGEMENT

As I have come towards the completion of my project report, I would like to seize this opportunity to acknowledge all the valuable contribution in my study.

It is the pleasure to utilize this unique opportunity to express my deep sense of gratitude and offer my most sincere and humble regard to my esteemed Faculty & guide **Dr. Sudhinder Singh Chowhan, Associate Professor, School of Pharmaceutical Management, IIHMR, Jaipur**, for his unparalleled and excellent, continuous encouragement and support for completion of my course and dissertation. His disciplines, principles, simplicity, and fearless work environment was cherished during the course.

I owe a great deal of application & gratitude to him as without his cooperation it would have been difficult to shape my project work.

I often wonder, if one gets to see “GOD” in the mortal life they might be like parents who shower their best fortunes always on me. From the deepest depth of my heart to express my thanks. I bow my head to the feet of my loved Parents, brother and family members, who’s uncompromising life principles, love and affection has always been unshared and showered upon me at all stages of life and giving me more than what I deserved in my life and without whose encouragement, co-operation and good wishes the work would have been impossible.

Last but not the least, I wish to express my gratitude towards “GOD- Almighty ” who gave me the strength and courage to fulfill my dream and showered me his choicest blessings.

Date: 08-06-2024

Place: Jaipur

SUMAN RITURAJ

Name & Signature of Student

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Introduction

PCOS (Polycystic Ovary Syndrome):

PCOS, or Polycystic Ovary Syndrome, is a prevalent hormonal imbalance affecting women during their childbearing years (ages 15 to 44). It's estimated to impact 2.2% to 26.7% of women in this age group, with many cases going undiagnosed.

A hormonal imbalance can cause a group of symptoms known as polycystic ovary syndrome, or PCOS, which can impact women and girls who are fertile. It's described and identified by a combination of polycystic ovarian morphology on ultrasonography, ovarian dysfunction, and excess androgen.

For both people who have already received a diagnosis and those who are worried they could have PCOS, this instructive brochure offers advice. Information about recent initiatives to comprehend and treat PCOS is also included.

Aspects of Dermatology



Symptoms of PCOS

- Irregular or infrequent menstrual periods, or even an absence of periods
- Excess hair growth on the face and body (hirsutism)
- Acne breakouts on the face, chest, and/or back
- Oily skin
- Skin darkening around the neck, groin, or under breasts
- Weight gain or difficulty losing weight
- Hair loss or thinning hair on the scalp
- Infertility or difficulty getting pregnant

Causes of PCOS

The exact cause of PCOS remains unknown. However, several factors are believed to contribute to its development, including:

- **Genetics:** Having a family history of PCOS increases the risk.
- **Insulin resistance:** The body's inability to use insulin effectively can play a role.
- **Inflammation:** Low-grade inflammation in the body may be a contributing factor.

Diagnosing PCOS

There's no single test for PCOS. Diagnosis often involves a combination of:

- Reviewing your medical history and symptoms
- Pelvic exam
- Blood tests to assess hormone levels and rule out other conditions
- Ultrasound imaging of the ovaries to check for cysts

RESEARCH ENVISAGED

PCOS, or polycystic ovarian syndrome, is a prevalent endocrine illness that affects 10% of women globally. It is linked to several metabolic and reproductive health problems and frequently appears throughout the reproductive years. Globally, PCOS prevalence is rising due to a number of factors including lifestyle modifications, hormonal imbalances, and genetic predisposition.

Changes in eating patterns, sedentary lifestyles, and environmental variables affecting hormone balance are all contributing contributors to the rise in PCOS instances. The illness is made worse by urbanisation, elevated stress levels, and processed food-heavy diets. Obesity, insulin resistance, cardiovascular risks, and fertility are common issues for women diagnosed with PCOS.

Although long-term management of symptoms such as irregular menstrual cycles and hormone imbalances remains a challenge, pharmaceutical treatments try to regulate them. way of living.

Aim of the study:

- ✓ *Study to determine the Knowledge, Awareness, and Perception (KAP) of students about polycystic ovarian syndrome.*
- ✓ To investigate adherence to prevention guidelines related to PCOS among students.
- ✓ To explore the relevance of diagnostic criteria, including hormonal imbalances and clinical symptoms, in identifying PCOS and its impact on reproductive and metabolic health.

LITERATURE REVIEW

Article 1

REVIEW ARTICLE – Awareness of Polycystic Ovarian Syndrome among College Going Females in Gurgaon: A Cross-Sectional Study, June 2022

- **AUTHORS** – Renuka Jakhar, Elina Dewan ji Sen, Rohit Dutt
- **PUBLISHED AT** – *Annals of the National Academy of Medical Sciences*
- **METHODOLOGY** – Cross-sectional study
- **OUTCOME** -The majority of these findings indicate low awareness among college-going females about PCOS symptoms beyond irregular menstruation, acne, weight gain, and abnormal hair growth. There is a critical need to enhance awareness of all PCOS symptoms and long-term health implications, such as diabetes, increased androgens, cardiovascular disease, and risks of endometrial and ovarian cancer.
- **REMARKS/CONCLUSION** - The findings revealed to the low awareness among college-going females about pcos symptoms, basic knowledge and awareness of pcos was not sufficient, they did have a thorough comprehension of it.

Article 2

REVIEW ARTICLE – A life course perspective on polycystic ovary syndrome, January 2014

- **AUTHORS** – Ninive Sanchez
- **PUBLISHED AT** – *International Journal of Women's Health*
- **METHODOLOGY** – Random Sample Study
- **OUTCOME** – The conclusion highlights the complex nature of PCOS and calls for a multidisciplinary approach that integrates psychosocial considerations, life course perspectives, and community-based interventions. It underscores the need for increased awareness, research, and policy attention to address the diverse health and mental health needs of women with PCOS throughout their lives.

- **REMARKS/CONCLUSION** – It is probable that biases crept into the research since HTN was still a major developing public health issue at the time.

However, it was already acknowledged at the time that in order to achieve effective HTN management as soon as possible, it is critical to maximize the effectiveness of HTN preventive programs in various nations.

Article 3

REVIEW ARTICLE –Awareness of polycystic ovary syndrome: A university students’ perspective.

- **AUTHORS** – Eman Alshdaifat, Amer Sindiani, Zouhair Amarin, Nadine Absy, Noor AlOsta, Husam Aldean Abuhayyeh, Mustafa Alwani.
- **PUBLISHED AT** – *Annals of Medicine and Surgery*
- **METHODOLOGY** – Cross-sectional Study
- **REMARKS/CONCLUSION** – Students in this study demonstrated a good level of PCOS awareness and mainly sought information from healthcare professionals. It would be highly desired to spread awareness to other sections of the population at large.

Article 4

REVIEW ARTICLE – Awareness of polycystic ovarian syndrome among young women in Western India, Dec -2019

- **AUTHORS** – Esha G.Chainan,
- **PUBLISHED AT** – *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*Chainani EG. *Int J Reprod Contracept Obstet Gynecol*.

- **METHODOLOGY** – Cross-sectional study
- **OUTCOME** – Out of 500 participants, only 38% of women recognized the term PCOS, with 26% aware of its organ system involvement. Friends or relatives were the main sources of information about the disorder for most participants. Additionally, only 17% of women were familiar with the various symptoms associated with PCOS.
- **REMARKS/CONCLUSION** –The concerning findings of this study reveal a lack of awareness among young women about PCOS, leading to delays in seeking medical advice. This contributes to PCOS being underrepresented and underdiagnosed. Given its prevalence, there is a pressing need for increased education among young women to mitigate its impact on fertility and insulin resistance.

Article 5

REVIEW ARTICLE – Awareness of polycystic ovary syndrome among obstetrician-gynecologists and endocrinologists in Northern Europe.

- **AUTHORS** – Terhi T. Piltonen^{1 *}, Maria Ruokojärvi¹, Helle Karro², Linda Kujanpää¹, Laure Morin-Papunen¹, Juha S. Tapanainen^{1,3}, Elisabet Stener-Victorin⁴, Inger Sundström-Poromaa⁵, Angelica L. Hirschberg⁶, Pernille Ravn⁷, Dorte Glinborg⁸, Jan Roar Mellembakken⁹, Thora Steingrimsdóttir¹⁰, Melanie Gibson-Helm¹¹, Eszter Vanky^{12,13}, Marianne Andersen¹⁴, Riikka K. Arffman¹, Helena Teede¹¹, Kobra Falah-Hassani
- **PUBLISHED AT** – *PLoS One*
- **METHODOLOGY** – Cross-sectional Survey
- **OUTCOME** – Twenty-eight percent of the physicians reported seeing more than 50 women with PCOS per year and 43% estimated the national prevalence of PCOS to be more than 10%. Over two-thirds of the physicians used the Rotterdam criteria for diagnosing PCOS.
- **REMARKS/CONCLUSION** – The study found that obstetricians, gynaecologists, and endocrinologists in Nordic nations and Estonia do not consistently follow Rotterdam diagnostic criteria and are unaware of common comorbidities.

PCOS, specifically psychosocial comorbidities. Additionally, care of PCOS was variable between physician groups. More information and education on PCOS is needed for clinicians worldwide, as evidenced by international findings. The recently published international PCOS standards are crucial for accurate diagnosis and management of the condition. Future efforts should focus on raising awareness and promoting the recommendations' application in practice.

RESEARCH METHODOLOGY, SAMPLING AND DATA COLLECTION

Research Type: Descriptive Study

Data Collection: Primary data will be obtained through an unbiased questionnaire completed by individuals, while secondary data will be gathered from published journals, literature, and reference books. Various statistical techniques will be utilized to present the data in a quantifiable manner.

Sample Size: A total of 152 participants were initially considered, of which 138 provided consent and participated.

Data Analysis: Data analysis for this study will involve using simple statistical tools such as those available in MS Excel. Graphs and results will be generated using MS Excel, based on the data collected from the 138 respondents.

Inclusion and Exclusion Criteria: Both male and female respondents above 18 years of age are eligible to participate, excluding individuals who have completed higher studies (post-graduation) or are currently employed, as well as senior citizens who have distinct lifestyles.

Study Area: PAN India

Duration: 3 months

Questionnaire: The questionnaire was created and distributed via Google Forms, and divided into 3 sections which are as follows:

General Information

- ✓ Consent, Gender, Age, marital Status, History of Polycystic ovary syndrome(PCOS) in family,

- ✓ Do you smoke tobacco?
- ✓ Number of cups of coffee per day
- ✓ When did you last have your menstrual cycle?
- ✓ Do you experience excessive hair growth (hirsutism)?
- ✓ Have you been diagnosed with insulin resistance or diabetes?
- ✓ How do you manage your weight?

Knowledge Assessment Test

- ✓ True/False/Unknown: Insulin resistance is a common metabolic feature associated with PCOS.
- ✓ True/False/Unknown: Obesity is a risk factor that can exacerbate symptoms of PCOS.
- ✓ Discuss the potential long-term health risks associated with untreated PCOS and how early diagnosis and management can mitigate these risks.
- ✓ What is one diagnostic test commonly used to confirm a diagnosis of PCOS?
- ✓ What is a potential complication of untreated PCOS?
- ✓ Name one medication commonly prescribed to manage symptoms of PCOS.
- ✓ Insulin resistance is a common feature associated with _____.
- ✓ Name one lifestyle change that is recommended for managing symptoms of PCOS.
- ✓ True/False/Unknown: PCOS can affect psychological well-being, with increased rates of anxiety and depression reported among affected individuals.
- ✓ True/False/Unknown: Regular monitoring of blood pressure and cholesterol levels is important for women with PCOS due to increased cardiovascular risks.

- ✓ True/False/Unknown: Women with PCOS are at higher risk for developing cardiovascular diseases such as hypertension and heart disease.
- ✓ True/False/Unknown: Obesity is a risk factor that can exacerbate symptoms of PCOS.
- ✓ True/False/Unknown: Women with PCOS are at increased risk for developing type 2 diabetes mellitus.

Adherence Practices

- ✓ Do you exercise regularly to manage your PCOS symptoms?
- ✓ Do you follow a specific diet plan to help with your PCOS?
- ✓ Do you take any herbal remedies or alternative medicines for your PCOS?
- ✓ Do you use vitamins or dietary supplements to support your PCOS management?

Section for positively tested patients or their familial relatives

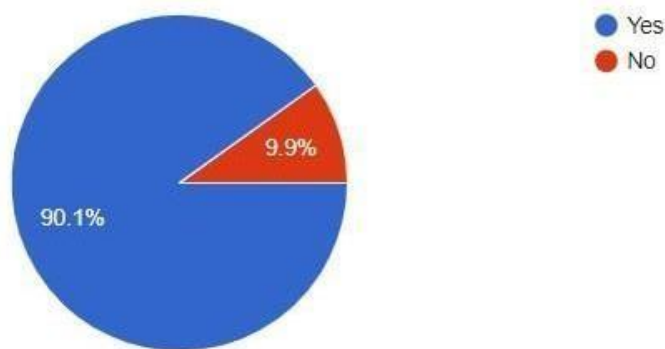
- ✓ If you have been diagnosed with PCOS, how old were you when you first learned about it? (in number of years)
- ✓ If you have not been diagnosed with PCOS, then please give the age of the familial relative who has been diagnosed. (in number of years)
- ✓ Gender of the familial relative diagnosed with PCOS.
- ✓ How old were they when they were first diagnosed with PCOS? (in number of years)
- ✓ Have you/they been informed by a healthcare provider (HCP) in the past year (12 months) that you/they have PCOS?
- ✓ Has a doctor in the past year recommended changes to your/their lifestyle to manage PCOS symptoms?
- ✓ How did you/they first learn about PCOS?
- ✓ Where were you/they first diagnosed with PCOS?

- ✓ Are you currently taking medication prescribed by a doctor to manage your PCOS symptoms? Yes/No
- ✓ If so, please provide a complete list of prescription drugs you have ever used for PCOS management, along with a brief description of any adverse effects you may have experienced.

DATA ANALYSIS

General Information

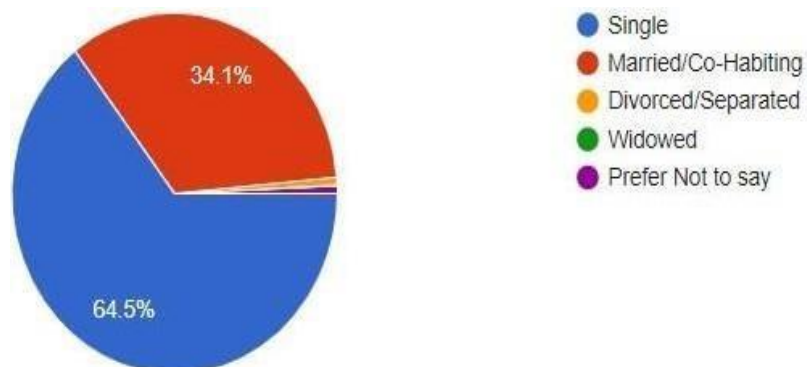
Number of people who gave consent for the survey: - It was observed that about 10% of the respondents either refused to give consent or just were not comfortable with giving the answers to all the questions



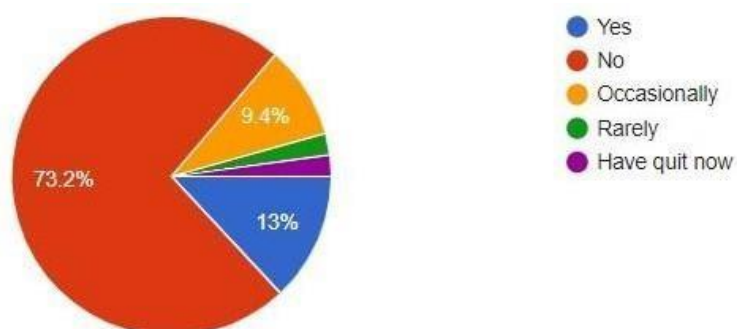
Gender: - It was observed that out of the 138 consenting respondents, the number of males and females was overall the same.



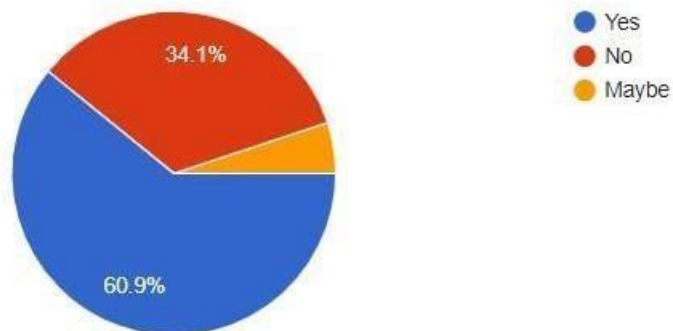
Marital Status: - It was observed that most of the respondents were either single or married. Very few respondents were Divorced and even fewer were either Widowed or Preferred not to disclose the information.



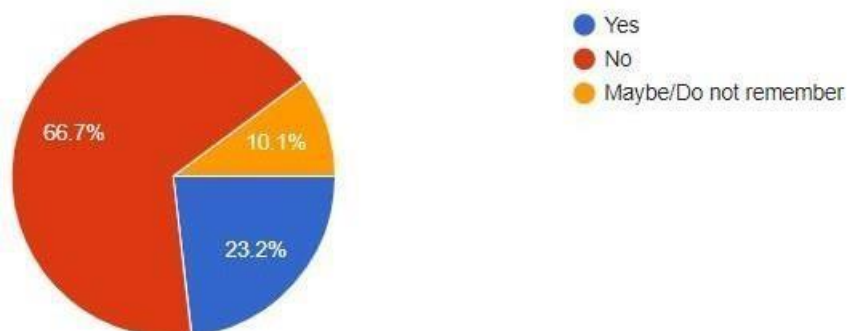
People who smoke Tobacco: - A majority of the respondents did not smoke, while a minority were only occasional smokers.



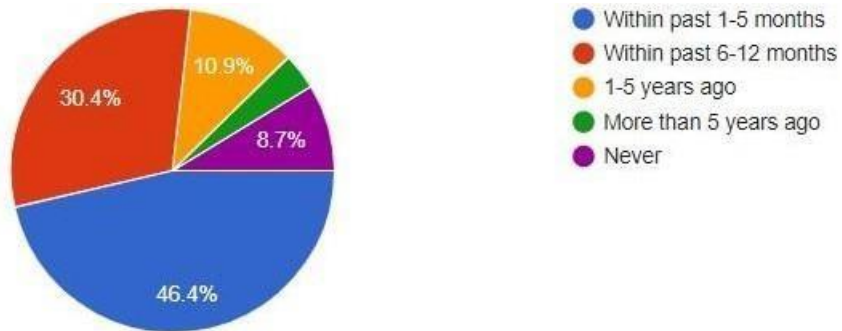
History of PCOS in family:- It can be seen about 60% of the respondents had some history of PCOS in the family,



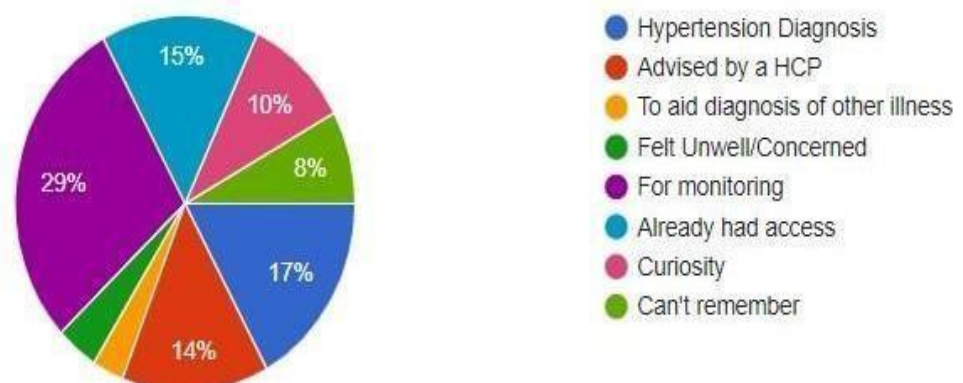
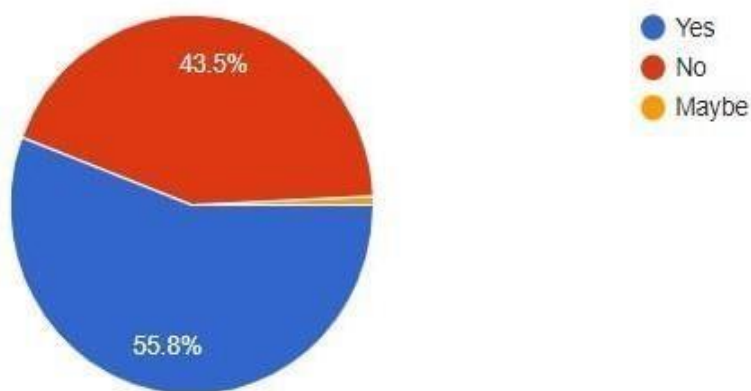
People who were previously informed by a Health-Care Professional (HCPs) about their Insulin Level:- Approximately 66% of the respondents did not have a HCP telling them that their insulin level as being high.



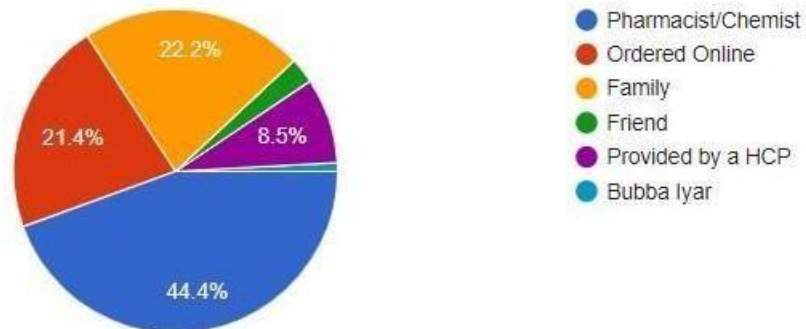
Time period of when they had last gone to a HCP to measure their Insulin Levels (BP Levels): - A HCP tested the blood pressure of almost 76% of the respondents within the last 12 months.



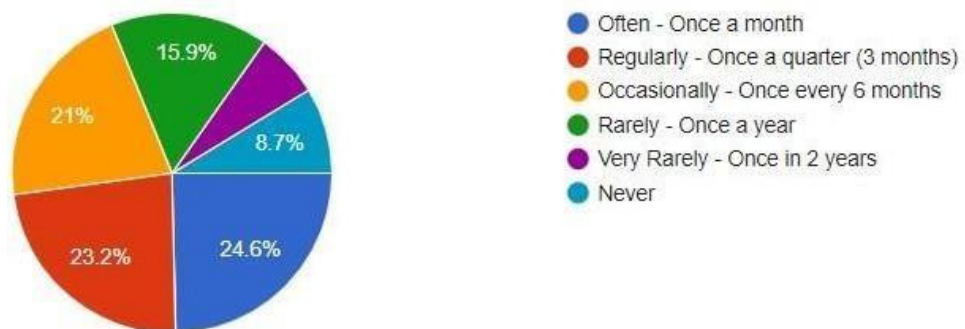
Whether they had a Insulin monitoring machine at their residence and themostaccurate reason for having it along with its source: - More than 50% of the respondents reported as already having an Glucose Meter measuring machine at home and about 30% stated their reason as for regular monitoring.



About 44% had visited a pharmacist and bought their machines from them after seeing product physically



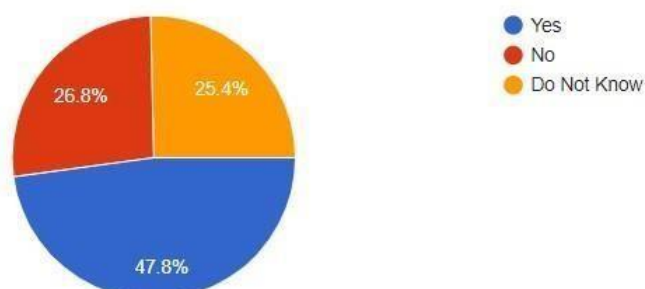
Frequency of measuring their Insulin level at their own discretion: - It can be observed that the respondents are quite evenly distributed in this pie chart reporting that the frequency of checking one's insulin level varies hugely among different respondents.



Knowledge Assessment Test

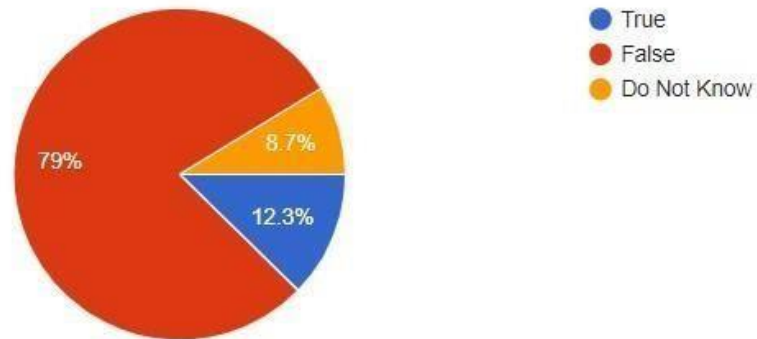
High BP can cause Diabetes.

138 responses



Smoking a pack of cigarettes a day will not affect a person's risk of Hypertension.

138 responses

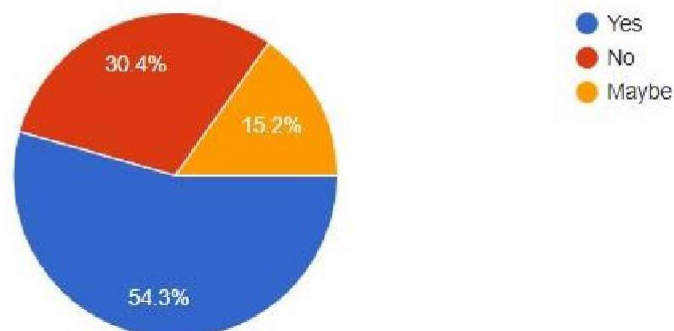


Adherence Practices

It can be observed from the pie chart given below that more than 54% of the respondents pray to relieve stress and reduce their BP levels and more than 15% are not sure about it.

Do you Pray to relieve stress/reduce BP levels?

138 responses



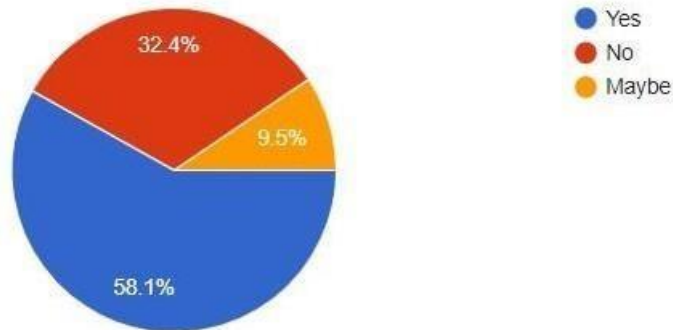
- ✓ Approximately 62% of respondents stated that they do not use any alternative medicine for managing their PCOS symptoms.

- ✓ More than 42% of respondents also denied using any vitamins or dietary supplements for managing PCOS.
- ✓ About 30% of respondents stated that they do not follow any body-based techniques to manage PCOS symptoms. However, approximately 47% reported engaging in regular exercise, and around 12% indicated using massage therapy to alleviate PCOS symptoms.

Section for positively tested patients or their familial relatives

- ✓ Approximately 30% of respondents indicated they were diagnosed with PCOS within the last decade.
- ✓ It can be inferred from the responses that most familial relatives who tested positive for PCOS were first diagnosed when they were post 30 years of age (early 2000s). Of these, about 55% were female.

- ✓ More than 50% of them did not have a healthcare provider (HCP) inform them that they have PCOS, but a doctor had recommended them to make lifestyle changes to manage their condition, amounting to 52%



- ✓ About 40% of them reported that they first learned about their PCOS during a routine medical check-up, while more than 15% reported having it diagnosed during a screening program.

CONCLUSION

Our analysis of Polycystic Ovary Syndrome (PCOS) data reveals significant familial history among respondents, indicating increased future risk. Despite this, there is poor adherence to preventive practices, necessitating targeted education for early detection and management. Our Knowledge Assessment Test shows varied awareness levels; comprehensive education is vital. We found gaps in monitoring tools and lifestyle adherence, underscoring the need for ongoing support. We recommend regular PCOS-focused health programs to enhance awareness and promote proactive management. Addressing knowledge gaps and improving awareness are crucial for better PCOS outcomes, fostering supportive healthcare environments for affected individuals.

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