



## Original Article

# Association of Pregnancy Outcome Complications Among Females with Polycystic Ovary Syndrome

Laiba Tariq<sup>1</sup>, Shaista Jabeen<sup>1</sup>, Hafsa Kamran\*, Areej Butt<sup>1</sup>, Mahe Yemeen<sup>1</sup>, Mafia Nazir<sup>1</sup>, Shaista Nazir<sup>1</sup>, Hira Nosheen<sup>1</sup>, Tabeer e Haram<sup>1</sup>, Samar Javed<sup>1</sup>, Hafsa Ali<sup>1</sup>, Shahzaib Ghouri<sup>1</sup> and Hashim Hayat Khan<sup>1</sup>

<sup>1</sup>University Institute of Diet & Nutritional Sciences, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

## ARTICLE INFO

### Key Words:

Pregnancy Complication, Polycystic Ovary Syndrome, Body Mass Index, Mayo Hospital Lahore

### How to Cite:

Tariq, L. ., Jabeen, S. ., Kamran, H., Butt, A. ., Yemeen, M. ., Nazir, M. ., Nazir, S. ., Nosheen, H. ., Haram, T. e ., Javed, S. ., Ali, H. ., Ghouri, S. ., & Hayat Khan, H. (2022). Association of Pregnancy Outcome Complications Among Females with Polycystic Ovary Syndrome: Complications Among Females with Polycystic Ovary Syndrome. DIET FACTOR (Journal of Nutritional & Food Sciences), 3(02).  
<https://doi.org/10.54393/df.v3i02.63>

### \*Corresponding Author:

Hafsa Kamran  
University Institute of Diet & Nutritional Sciences, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan  
[hfsakamran7@gmail.com](mailto:hfsakamran7@gmail.com)

Received Date: 23<sup>rd</sup> August, 2022

Acceptance Date: 20<sup>th</sup> October, 2022

Published Date: 31<sup>st</sup> December, 2022

## ABSTRACT

Association of pregnancy outcome complications among females with polycystic ovary syndrome among females of reproductive age between 18 to 55 years, in relation to their knowledge and attitude about complications in pregnancy and polycystic ovary syndrome.

**Objectives:** To find out the complications and dietary patterns associated with pregnancy due to polycystic ovary syndrome among the reproductive age females. **Methods:** A cross-sectional study was carried out from the Mayo hospital Lahore. 200 participants were included in the study. The participants were assessed through a questionnaire. SPSS version 20 was used for data analysis. Inclusion criteria, female of reproductive age in Mayo hospital Lahore. **Results:** All of the 220 participants filled out the questionnaire under observation and with proper knowledge. The results from the questionnaire suggested that out of 220 participants 21-25 years and >30 years of females with BMI over-weight and obese have more chances on complication in pregnancy while have PCOS. While 18-20 years with under-weight BMI have 20% chances for having complications. **Conclusion:** This study concluded there is a high association in the pregnancy outcome complications in females with polycystic ovary syndrome. Those who have more adverse complications might have chances to have a BMI generally obese or over-weight. Our study significantly reflects that mostly women have a family of gestational diabetes, pregnancy induced hyper-tension have more chances of have preterm babies or delivery complications due to PCOS.

## INTRODUCTION

Polycystic ovarian syndrome (PCOS) has been linked inconclusively to an increased risk of miscarriage. The most prevalent endocrine condition in women of reproductive age is polycystic ovarian syndrome (PCOS), with a reported frequency between 6% and 15% [1, 2]. Ovulation problems, an excess of testosterone, and polycystic ovarian morphology are the disease's defining features [3]. Pregnancies in PCOS patients were linked to an increased risk of preeclampsia, preterm delivery, small-for-gestational-age (SGA), gestational diabetes mellitus (GDM), pregnancy-induced hypertension (PIH), and small-for-gestational-age (GDM) [4]. However, caesarean

deliveries, operative vaginal deliveries, and large-for-gestational-age (LGA) deliveries were not significantly. However, there are little and conflicting data on how PCOS during pregnancy affects subsequent foetal and neonatal outcomes. During pregnancy, PCOS increased the risk of GDM, PIH, preeclampsia, preterm delivery, and caesarean delivery, which had a negative effect on the birth weight and elevated the chance of NICU admission, according to a meta-analysis [5, 6]. Similar findings were obtained when the link between PCOS during pregnancy and GDM risk was investigated [7]. The majority of prenatal and neonatal outcomes could not be examined, which was a

fundamental shortcoming of the earlier investigations. Furthermore, there is ongoing debate over the likelihood that the relationship between PCOS during pregnancy and unfavourable pregnancy, foetal, and neonatal outcomes may vary depending on aspects including study design, mean age, and pre-body mass index. PCOS during pregnancy did not appear to affect the course of the pregnancy, according to several observational studies [8, 9]. The ovaries produce a lot of androgens, which causes hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology (PCOM), which are common symptoms of PCOS [10]. In women during their reproductive year, polycystic ovarian syndrome (PCOS) is a prevalent endocrine condition that negatively impacts fertility and reproductive health [11]. The Rotterdam criteria state that PCOS must include two of the following three characteristics: polycystic ovaries, clinical or biochemical evidence of hyperandrogenism, and oligomenorrhea/amenorrhea [12]. PCOS is prevalent in 8–12% of females worldwide who are of reproductive age [13].

## METHODS

Cross Sectional was conducted at Mayo Hospital Lahore. A total of 200 samples were included in the current study. The inclusion Criteria was female of reproductive age in Mayo hospital Lahore. Exclusion criteria was all male persons, every girl age less than 18 years, and every female age more than 55 years. A standardized questionnaire was used. The study was done in accordance with the guidelines established by the Mayo Hospital ethical committee, and the participants' rights were upheld. All participants provided written informed consent with a copy of their signature. All collected data and information were kept private. A participant's identity was maintained throughout the whole investigation. The study's procedure carries no risks or drawbacks, the subjects were informed. They were also told that they could leave the study at any point while it was still in progress. The researcher used a pre-tested data collecting method (questionnaire/ Performa) to gather data after obtaining informed written consent. The following variables from the questionnaire were used to collect data: From the participants, demographic information was collected. Questions were asked from the females of reproductive ages about their dietetic habits and effects on their health. The data was analyzed through SPSS in the form of tables. The data was reported using descriptive and inferential statistics. The quantitative variables like age, gender, etc. was assessed using mean standard deviation and standard errors. The qualitative variables were reported using percentages and frequencies. The association between variable and subject was determined through p value.

## RESULTS

Table 1 describes out of 220 people 14.3% always, 27.1% never, 41.4% sometimes and 17.1% generally can't control over diet when they have hormonal imbalance. This table describes out of 220 people 16.2% always, 32.9% never, 32.4% sometimes and 18.6% generally eat food when they are not feel hungry. This table describes out of 220 people 28.6% always, 35.7% never, 23.8% sometimes and 11.9% generally get enough sleep.

| Frequency distribution of Control of diet during hormonal imbalance | N (%)      |
|---|------------|
| Always  | 30 (14.3%) |
| Never   | 57 (27.1%) |
| Sometimes   | 87 (41.4%) |
| Generally   | 36 (17.1%) |
| Episodes of overeating when not hungry                              |            |
| Always  | 34 (16.2%) |
| Never   | 69 (32.9%) |
| Sometimes   | 68 (32.4%) |
| Generally   | 39 (18.6%) |
| Enough sleep pattern  |            |
| Always  | 60 (28.6%) |
| Never   | 75 (35.7%) |
| Sometimes   | 50 (23.8%) |
| Generally   | 25 (11.9%) |
| Total   | 220 (100%) |

**Table 1:** Difficulty for control over diet during hormonal imbalance, episodes of overeating and enough sleep

Table 2 describes out of 220 people 18.6% always, 33.3% never, 33.3% sometimes and 14.8% generally eat five portions of fruits and veges per day. This table describes out of 220 people 20% always, 27.9% never, 31.0% sometimes and 21.0% generally keep on thinking about one or more specific foods until actually you eat the food.

| Portions of vegetables and fruits      | N (%)      |
|--|------------|
| Always                                 | 39 (18.6%) |
| Never                                  | 70 (33.3%) |
| Sometimes                              | 70 (33.3%) |
| Generally                              | 31 (14.8%) |
| Eating starters before a complete meal |            |
| Always                                 | 42 (20%)   |
| Never                                  | 58 (27.6%) |
| Sometimes                              | 65 (31%)   |
| Generally                              | 44 (21%)   |
| total                                  | 220 (100%) |

**Table 2:** Five portions of vegetables and fruits a day and eating starters before a complete meal

Table 3 describes out of 220 people 21.4% always, 25.7% never, 37.1% sometimes and 15.7% generally have lack of control of eating. This table describes out of 220 people 30.5% always, 27.6% never, 28.1% sometimes and 13.8% generally have an intense desire to eat one or more food e.g sugary food/oily food

| Lack of control over eating            | N (%)      |
|--|------------|
| Always                                 | 45 (21.4%) |
| Never                                  | 54 (25.7%) |
| Sometimes                              | 78 (37.1%) |
| Generally                              | 33 (15.7%) |
| Intense desire to eat one or more food |            |
| Always                                 | 64 (30.5%) |
| Never                                  | 58 (27.6%) |
| Sometimes                              | 59 (28.1%) |
| Generally                              | 29 (13.8%) |
| total                                  | 220 (100%) |

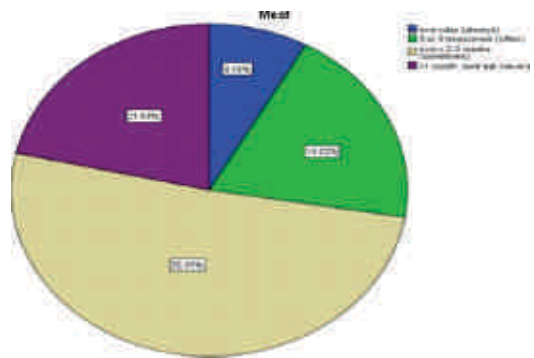
**Table 3:** Lack of control over eating and intense desire to eat one or more food

In the table 04 it is clearly shown that 67% ,55% over-weight or obese female always feel less control in their diet while on periods beside under-weight and normal women have more control over their diet. Having the P-value of .013

|               |              | Do you feel less control over your diet when your periods are delayed |       |           |           | Total | P-value |
|---------------|--------------|---|-------|-----------|-----------|-------|---------|
|               |              | Always  | Never | Sometimes | Generally |       |         |
| BMI of client | under-weight | 3   | 15    | 6         | 12        | 36    | .013    |
|               | normal       | 5   | 29    | 13        | 25        | 22    |         |
|               | over-weight  | 33  | 03    | 26        | 5         | 67    |         |
|               | obese        | 24  | 9     | 15        | 7         | 55    |         |
|               | Total        | 25  | 96    | 60        | 29        | 220   |         |

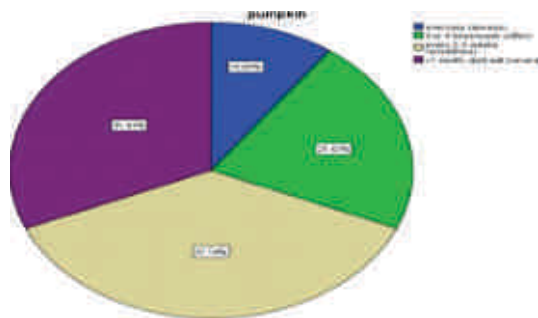
**Table 4:** BMI with less control in your diet

Figure 1 describe out of 220 people 8.1% every day, 51.0% every 2 to 3 weeks and 21.4% people never consume meat.



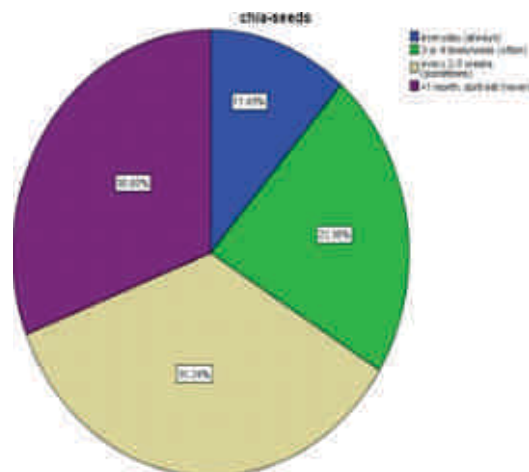
**Figure 1:** Meat consumption by study participants

Figure 2 describe out of 220 people 10% always , 21.4% often ,37% sometimes and 31% never eat pumpkin.



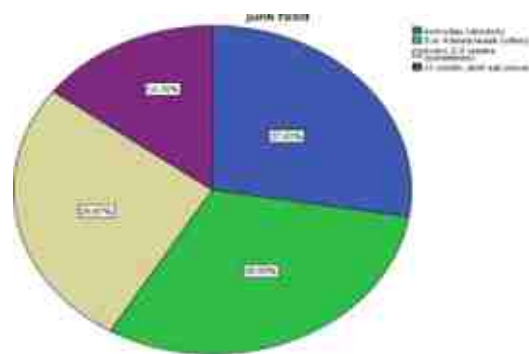
**Figure 2:** Pumpkin eating by study participants

figure 3 describe out of 220 people 11.4% always ,22.4% often ,35.2% sometimes and 31.0 never consume chia seed.



**Figure 3:** Chia seed eating by study participants

Figure 4 describe out of 220 people 27.6% always ,31.0% often ,26.7% sometimes and 14.8% never consume junk food



**Figure 4:** Junk food eating by study participants

## DISCUSSION

We conducted a study to determine the prevalence of association of pregnancy outcome complications among females with polycystic ovary syndrome.2 We enrolled 200 students for our study, all of them whom are females, using non probability technique [2]. According to Kjerulff et al., PCOS in pregnancy is related with greater rates of gestational diabetes mellitus, pregnancy-induced hypertension, preeclampsia, preterm delivery, caesarean delivery, operative vaginal delivery, SGA, and large-for-gestational age. [14]. Similarly our study concluded that 30% and 21% of women who are obese of over-weight having PCOS show the symptoms of hypoglycemia gastational diebeties etc. According to Hai-Feng Yu et al., the purpose of this study is to understand the relationship between pregnancy in women with PCOS and pregnancy complications [15]. which discovered a connection between PCOS and an increased risk of gestational

diabetes mellitus (GDM), preeclampsia, PIH, preterm birth, caesarean section, miscarriage, hypoglycemia, and neonatal death during pregnancy. Similarly, according to our study, 200 women 10.0% yes, 31.4% maybe, have gestational diabetes, preeclampsia, PIH, preterm delivery etc. According to a similar study conducted by Ghazeeri et al., metformin has proven efficacy in improving ovulation and pregnancy rates among patients receiving fertility-enhancing agents; thus, its use among an ovulatory women with PCOS is of prominent significance [16]. Likewise in our study which we conducted reported that out of 200 people 44.3% never take hormonal contraceptives or metformin in their life or during PCOS or pregnancy that's why they got higher chances of complications in pregnancy with PCOS as these medicines helps to lowers the adverse consequences by PCOS in pregnancy. According to the results of our study 200 people 29.0% never take inositol while having PCOS. Out of 200 people 20.5% never use folic acid supplements before and after having PCOS and 44.3% never use any contraceptives. Similarly according to the study conducted by Joham AE, et al., concluded that women with PCOS had lower rates of contraceptive usage and were more likely to be attempting to conceive, implying that they were aware of possible reproductive issues. Obesity, metabolic problems, infertility, and fertility medication usage may all have an influence on pregnancy outcomes in PCOS. Those with PCOS have been found to have a threefold increased risk of miscarriage compared to women without PCOS [17]. In our survey, it describes out of 200 people 11.4% have diabetes in their family history. It is shown that 40.1% of female have gestational diabetes, pregnancy-induced hypertension, and preeclampsia, hyperinsulinemia. Similarly a study that is conducted by Sruthi Viswanathan, et al., shows that pregnancy complications like spontaneous abortions, gestational diabetes, APGAR and low HRQoL was more associated with PCOS. Which can be genetic or in family history of the patients [18]. A study by Stefano Palomba, et al., confirmed that women with PCOS, a possible relationship with genetic, environmental, clinical and biochemical factors involved in this complex condition, as well as with pregnancy complications and long-term health for both mother and child, remains to be established [19]. Likewise in our study, it is clearly evident that 41.0% never have a good social life which eventually lead toward pregnancy complications. A study conducted by Priyanka Raj, et al. showed that the participants with overweight/obesity were 35% among the women with PCOS when compared to 25% among the women without PCOS. 26 Similarly our study shows, 67%, 55% over-weight or obese female always feel less control in their diet while on periods beside under-weight and normal women have more control over their diet

[20].

## CONCLUSIONS

This study concluded that there is a high association in the pregnancy outcome complications in females with polycystic ovary syndrome. Those who have more adverse complications might have chances to have a higher BMI or generally obese or over-weight. Our study significantly reflects that mostly women have a family of gestational diabetes, pregnancy induced hyper-tension have more chances of have preterm babies or delivery complications due to PCOS. Women who have no intake of metformin, inositol, folic acid during or before pregnancy while having pregnancy might have greater chances of having complications. Good social life style also have a great impact on complications associated with pregnancy or having PCOS.

## Conflicts of Interest

The authors declare no conflict of interest

## Source of Funding

The author(s) received no financial support for the research, authorship and/or publication of this article

## REFERENCES

- [1] Franks S. Polycystic ovary syndrome. *New England Journal of Medicine*. 1995 Sep ; 333(13): 853-61. [doi: 10.1056/NEJM199509283331307](https://doi.org/10.1056/NEJM199509283331307)
- [2] Fauser BC, Tarlatzis BC, Rebar RW, Legro RS, Balen AH, Lobo R, et al. Consensus on women's health aspects of polycystic ovary syndrome (PCOS). *Hacettepe*. 2012.
- [3] Ansari RM. Potential use of durian fruit (*Durio zibenthinus* Linn) as an adjunct to treat infertility in polycystic ovarian syndrome. *Journal of integrative medicine*. 2016 Jan; 14(1): 22-8. [doi: 10.1016/S2095-4964\(16\)60240-6](https://doi.org/10.1016/S2095-4964(16)60240-6)
- [4] Katulski K, Czyzyk A, Podfigurna-Stopa A, Genazzani AR, Meczekalski B. Pregnancy complications in polycystic ovary syndrome patients. *Journal of Gynecological Endocrinology*. 2015 Feb; 31(2): 87-91. [doi: 10.3109/09513590.2014.974535](https://doi.org/10.3109/09513590.2014.974535)
- [5] Falbo A, Rocca M, Russo T, D'Ettore A, Tolino A, Zullo F, et al. Changes in androgens and insulin sensitivity indexes throughout pregnancy in women with polycystic ovary syndrome (PCOS): relationships with adverse outcomes. *Journal of Ovarian Research*. 2010 Dec; 3(1): 1-8. [doi: 10.1186/1757-2215-3-23](https://doi.org/10.1186/1757-2215-3-23)
- [6] Qin JZ, Pang LH, Li MJ, Fan XJ, Huang RD, Chen HY. Obstetric complications in women with polycystic ovary syndrome: a systematic review and meta-analysis. *Reproductive Biology and Endocrinology*.



- 2013 Dec; 11(1): 1-4. [doi: 10.1186/1477-7827-11-56](https://doi.org/10.1186/1477-7827-11-56)
- [7] Toulis KA, Goulis DG, Kolibianakis EM, Venetis CA, Tarlatzis BC, Papadimas I. Risk of gestational diabetes mellitus in women with polycystic ovary syndrome: a systematic review and a meta-analysis. *Journal of Fertility and sterility*. 2009 Aug; 92(2): 667-77. [doi: 10.1016/j.fertnstert.2008.06.045](https://doi.org/10.1016/j.fertnstert.2008.06.045)
- [8] Sawada M, Masuyama H, Hayata K, Kamada Y, Nakamura K, Hiramatsu Y. Pregnancy complications and glucose intolerance in women with polycystic ovary syndrome. *Endocrine journal*. 2015: 15-0364. [doi: 10.1507/endocrj.EJ15-0364](https://doi.org/10.1507/endocrj.EJ15-0364)
- [9] Yao K, Bian C, Zhao X. Association of polycystic ovary syndrome with metabolic syndrome and gestational diabetes: Aggravated complication of pregnancy. *Journal of Experimental and therapeutic medicine*. 2017 Aug; 14(2): 1271-6. [doi: 10.3892/etm.2017.4642](https://doi.org/10.3892/etm.2017.4642)
- [10] Azziz R, Yildiz B, Woods KS, Reyna R, Key TJ, Stephens KC, et al. The prevalence of polycystic ovary syndrome among unselected consecutive premenopausal women. *The Journal of Clinical Endocrinology and Metabolism*. 2004; 89: 2745-9. [doi: 10.1210/jc.2003-032046](https://doi.org/10.1210/jc.2003-032046)
- [11] Stein IF. Amenorrhea associated with bilateral polycystic ovaries. *American Journal of Obstetrics and Gynecology*. 1935; 29: 181-91. [doi: 10.1016/S0002-9378\(15\)30642-6](https://doi.org/10.1016/S0002-9378(15)30642-6)
- [12] Lee TT, Rausch ME. Polycystic ovarian syndrome: role of imaging in diagnosis. *Radiographics*. 2012 Oct; 32(6): 1643-57. [doi: 10.1148/rq.326125503](https://doi.org/10.1148/rq.326125503)
- [13] Bani M and Majdi, S. A. Polycystic ovary syndrome (PCOS), diagnostic criteria, and AMH. *Asian Pacific Journal of Cancer Prevention*. 18(1), 17-21(2017).
- [14] Kjerulff LE, Sanchez-Ramos L, Duffy D. Pregnancy outcomes in women with polycystic ovary syndrome: a metaanalysis. *American Journal of Obstetrics and Gynecology*. 2011 Jun; 204(6): 558.e1-6. [doi: 10.1016/j.ajog.2011.03.021](https://doi.org/10.1016/j.ajog.2011.03.021)
- [15] Yu HF, Chen HS, Rao DP, Gong J. Association between polycystic ovary syndrome and the risk of pregnancy complications: a PRISMA-compliant systematic review and meta-analysis. *Medicine*. 2016 Dec; 95(51). [doi: 10.1097/MD.0000000000004863](https://doi.org/10.1097/MD.0000000000004863)
- [16] Ghazeeri GS, Nassar AH, Younes Z, Awwad JT. Pregnancy outcomes and the effect of metformin treatment in women with polycystic ovary syndrome: an overview. *Acta Obstetrica et Gynecologica Scandinavica*. 2012 Jun; 91(6): 658-78. [doi: 10.1111/j.1600-0412.2012.01385.x](https://doi.org/10.1111/j.1600-0412.2012.01385.x)
- [17] Joham AE, Boyle JA, Ranasinha S, Zoungas S, Teede HJ. Contraception use and pregnancy outcomes in women with polycystic ovary syndrome: data from the Australian Longitudinal Study on Women's Health. *Human reproduction*. 2014 Feb; 29(4): 802-8. [doi: 10.1093/humrep/deu020](https://doi.org/10.1093/humrep/deu020)
- [18] Viswanathan S, Jiji R, Nayana BC, Baby C. Pregnancy complications associated with polycystic ovary syndrome: A cross sectional study. *World Journal of Pharmacology Research*. 2022 Mar; 11(5): 1539-52.
- [19] Palomba S, De Wilde MA, Falbo A, Koster MP, La Sala GB, Fauser BC. Pregnancy complications in women with polycystic ovary syndrome. *Human reproduction update*. 2015 Sep; 21(5): 575-92. [doi: 10.1093/humupd/dmv029](https://doi.org/10.1093/humupd/dmv029)
- [20] Raj P, Pritam A, Anant M. A Comparison of Pregnancy-Related Problems in Women with and Without Polycystic Ovarian Syndrome was Conducted (PCOS). 2021; 13(5); 120-127.