Community Dietary and Exercise Strategies to Mitigate Symptoms of Polycystic Ovary Syndrome

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2025 Virginia Governor's School for Agriculture, Virginia Tech

Abstract

Polycystic ovary syndrome (PCOS) is a hormonal and metabolic disorder characterized by heightened androgens, or hormones associated with male sex characteristics, that circulate in the bloodstream of affected women. This hormonal imbalance contributes to the development of small cysts on the ovaries and irregular menstrual cycles, which can lead to infertility. Other symptoms include hirsutism, insulin resistance (IR), and acne, although not all symptoms must be present for a PCOS diagnosis. Symptoms are often prevalent following menarche, and PCOS is usually diagnosed alongside co-existing conditions such as obesity, type 2 diabetes, and endometrial cancer, which increase health risks in individuals with PCOS. Diet and physical activity are proven first-line approaches to managing PCOS symptoms such as IR. Given this, the present literature review evaluates three community strategies that involve diet and exercise to mitigate the symptoms of those diagnosed with PCOS. This paper focuses on how food-access programs connecting the Supplemental Nutrition Assistance Program (SNAP) with Community Supported Agriculture (CSA) can provide greater access to healthy meals, particularly those belonging to a Mediterranean diet, which emphasizes limiting saturated fats, trans fats, and processed sugars; how pricing policies such as taxes on high-sugar beverages and subsidies for healthier foods can promote healthier eating; and how structured community exercise programs, mirroring programs for other chronic diseases, can provide an effective mode of physical activity. Together, these interventions may improve PCOS by alleviating symptoms such as IR and irregular menstruation.

Acknowledgments

This literature review would not have been possible without the full support of the faculty and staff of the Virginia Governor's School for Agriculture at Virginia Tech. We would like to thank our Global Seminar Leaders for their direction and the program directors for organizing our research. We extend our appreciation to the many volunteers who reviewed our work and to the families and institutions that gave us this opportunity.

Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders in women and a leading cause of infertility, yet it remains underdiagnosed and underresearched. This literature review examines various dietary and exercise approaches for treating PCOS, with a focus on community-level interventions. PCOS is a chronic endocrine and metabolic disease

characterized by hyperandrogenism, oligomenorrhea (infrequent menstruation), and ovarian cysts. As a hormonal imbalance disorder, it directly affects menstruation and ovulation, leading to reproductive complications. An estimated 6-13% of women suffer from PCOS; however, up to 70% of affected women remain undiagnosed. The average age of diagnosis is close to 27, shockingly over a decade after the average age of adolescence, where PCOS generally develops (World Health Organization, 2025; Yu et al., 2023). Individuals with PCOS have high levels of luteinizing hormone and low levels of follicle-stimulating hormone, disrupting normal follicle development and impeding ovulation, which contributes to infertility and heightened androgen levels. PCOS is also linked to a higher risk of various cardiometabolic problems: the majority of affected women have insulin resistance (IR), and patients may have an increased risk of heart disease (Xu & Qiao, 2022).

Currently, pharmaceutical medications such as the combined oral contraceptive pill (COCP) and metformin are often utilized to manage PCOS symptoms, such as hirsutism and IR (Ee & Tay, 2024). However, medication is not always a recommended effective treatment for PCOS alone. In addition to medications, lifestyle modifications are a core focus and primary therapy (Teede et al., 2023). This review strictly focuses on the role of diet and exercise as community interventions for PCOS.

A proper diet and nutritional status are crucial for managing or preventing PCOS. The World Health Organization consistently recommends that food groups such as fruits and vegetables are fundamental to a healthy diet (Devirgiliis et al., 2024). The current most effective diet for PCOS seems to be the Mediterranean diet (Che et al., 2021). This diet involves an increased intake of fresh produce, especially fruits and vegetables. However, combating symptoms of PCOS goes beyond telling patients to eat their fruits and vegetables. It involves introducing them to a new approach to lifestyle and diet. To provide everyone with access to such fresh produce, programs like the Supplemental Nutrition Assistance Program may collaborate with local farmers and Community Supported Agriculture (CSA) programs to offer communities fresher, nutrient-dense produce, thereby improving overall health. Additionally, communities may implement tax policies to encourage the sale of healthy foods while discouraging the consumption of unhealthy items, thus alleviating PCOS pathogenesis-related complications and symptoms.

Exercise is also shown to be an effective measure, improving associated symptoms such as IR and ovulation, and reducing the risk of comorbid diseases. Various studies have seen improvements in these areas with both aerobic and resistance exercise over time. Additionally, a lack of physical exercise and a sedentary lifestyle may add to the manifestation of PCOS in women (Sabag et al., 2024; Zhang, 2018). To promote exercise for women with PCOS, this review evaluates the effectiveness of community-based exercise programs for chronic diseases and the implementation of such programs designed explicitly for affected women.

Such community-based approaches to mitigate PCOS symptoms align with the United Nations Sustainable Development Goal of Good Health and Well-being as well as the USDA AFRI (Agriculture and Food Research Initiative) priority area of Food Safety, Nutrition, and Health to ensure a healthier global future. This review, therefore, asks: Which community-level strategies in

healthy dietary access, food pricing policies, and group exercise programs are most viable and supported by evidence as effective approaches to improve PCOS?

Problem Statement

Despite its prevalence and large health impact, PCOS is underresearched and could be better understood. Core characteristics such as IR and inflammation can be improved through diet and physical activity. However, many women fail to recognize their PCOS and face barriers to healthy foods and supportive exercise. There is a need to evaluate community-level strategies that improve access to healthy diets and regular physical activity, such as through SNAP with Community Supported Agriculture, coordinated price policies, and directed group exercise programs. Examining these possible approaches can provide insight into how to reduce PCOS symptoms and promote greater public health.

Methods

This literature review searched sources between June and September 2025 through scholarly databases such as PubMed, Google Scholar, ScienceDirect, JSTOR, and relevant CDC or WHO databases. Searches were done with keywords including “polycystic ovary syndrome,” “community exercise,” “Mediterranean diet,” and “insulin resistance.” Only English-language sources published in 2015 or after by credible scholars or organizations were included. Furthermore, all sources related to adolescent or adult women with PCOS, dietary public health approaches, exercise programs, metabolic interventions for PCOS, or other related ideas. After selecting sources, the evidence was grouped into three community-based strategies:

- Dietary interventions and community food access programs
- Policy approaches using pricing strategies to encourage healthy diets
- Exercise-based interventions, including community group programs

Background

Diet and Food Assistance Programming with Local Food Procurement

The Effect of Diet on PCOS

PCOS characteristically has symptoms such as IR, hormonal imbalances, and systemic inflammation, all of which can be improved through dietary interventions (Ajorlouie et al., 2025). A recent review highlighted the potential of specific nutrients found in fruits and vegetables, such as polyphenols, vitamins, and fiber, in regulating metabolic and endocrine dysfunctions associated with PCOS (Sharma et al., 2025). A diet rich in high-fiber foods, such as fruits, vegetables, whole grains, and nuts, can help regulate blood sugar and improve insulin sensitivity. At the same time, omega-3 sources, such as walnuts, flaxseeds, and fatty fish, may help reduce inflammation associated with PCOS. Including monounsaturated fats (from avocados, almonds, seeds, and olive oil) and lean proteins (such as fish, poultry, tofu, and lentils) in one's diet further supports weight management, blood sugar stability, and satiety (Malhotra et al., 2020).

Various studies have shown that sustaining specific diets, with key components referenced in Table 1, such as a Mediterranean diet (MedDiet), a ketogenic diet (KD), Dietary Approaches to Stop Hypertension (DASH), Low-GI Diets, and the Pulse-Based Diet (PBD), are effective strategies and are being used as a first-line treatment for PCOS (Che et al., 2021). Those diagnosed with PCOS experience a variety of manifestations, including infertility, IR, and dyslipidemia (Yau et al., 2017). Plus, patients are at an increased risk of obesity, metabolic, and reproductive dysfunction (Kakoly et al., 2018). Although there are many different kinds of dietary interventions to mitigate the effects of PCOS, the MedDiet appears to be the most beneficial for those with PCOS, as it can protect against multiple IR diseases and offers a high nutritional value, making it a valuable option for regular consumption (Martínez-González et al., 2015). Key components of the MedDiet include a high profile of Vitamin E and oleic acid, which function as a treatment for chronic inflammation and cancer, and Polyphenols, which improve insulin sensitivity and help maintain normal glucose levels (compensatory hyperinsulinemia) (Ditano-Vázquez et al., 2019).

Table 1

Summary of diets and their key benefits for PCOS management

Dietary pattern	**Primary components**	**Functional benefits**
Mediterranean diet (MedDiet)	Olive oil, polyphenols, oleic acid, Vitamin E, Resveratrol	Anti-inflammatory, improves insulin sensitivity, reduces androgen production
Ketogenic diet (KD)	Ketosis, whey or vegetable protein	Lowers insulin resistance, decreases androgen levels
Dietary approaches to stop hypertension (DASH)	Antioxidants, folic acid, magnesium, dietary fiber, calcium, folate	Improve metabolic profile, may regulate insulin and androgens
Low-glycemic index (Low-GI)	Low-GI foods	Enhances glycemic control, may improve menstrual regularity
Pulse-based diet (PBD)	Phytochemicals, saponins, tannins, folate	Promotes microbiome health, may reduce risk of cancers

Note. Adapted from "Dietary interventions: A promising treatment for polycystic ovary syndrome," by Che, X., Chen, Z., Liu, M., & Mo, Z, Annals of Nutrition and Metabolism, 77(6), 313-323 (2021). https://doi.org/10.1159/000519302

Even with the MedDiet prevailing over other previously mentioned diets, it is essential to note that the different kinds of diets (DASH, Low-Calorie, etc.) have a substantial impact on more specific symptoms that someone with PCOS might experience. A meta-analysis revealed results compiled from data on 727 patients who were treated with various types of dietary interventions and ranked according to their effectiveness in reducing specific conditions. Out of the 10 tested, the DASH diet yielded the best results, having a statistically superior effect on the Homeostatic Model Assessment for Insulin Resistance (HOMA-IR) and weight compared to the control regular diet, among the studied dietary interventions in women with PCOS. Even with the DASH diet coming out as the most effective in the study's results, it is noted that due to a limited number of studies, only one trial evaluated the effects of the MedDiet, which explains the lack of beneficial dietary information from this specific study (Juhász et al., 2024).

Food Assistance Programming and the Importance of Local Food Procurement

Women from low socioeconomic backgrounds often face the greatest barriers to accessing such nutritious diets, which can exacerbate PCOS symptoms. Research shows that low-income individuals are more likely to rely on processed, unhealthy foods compared to higher-income individuals (French et al., 2019). Because of this and similar factors, studies show that women in lower-income classes have significantly higher odds of PCOS compared with those in higher-income classes (Rubin et al., 2018). Furthermore, PCOS patients with low socioeconomic status are more likely to experience reproductive complications such as pregnancy-induced hypertension and pre-eclampsia (Hochberg et al., 2023). Addressing these inequities is critical for the community treatment of PCOS, and so interventions such as the Supplemental Nutrition Assistance Program (SNAP) and Community Supported Agriculture (CSA) directed towards those with limited financial access may help millions of women.

Food assistance programs, such as SNAP, have been supporting families since 1964. Throughout 2017, the SNAP program helped approximately 42 million low-income families each month by providing food stamps and other forms of assistance. A balanced diet is not only crucial for one's nutritional intake but can also be a preventive measure against chronic illnesses in the future. For women with PCOS in particular, access to affordable, nutritious foods is especially important as a poor diet can lead to worsening symptoms. Programs like this are helpful for families and communities facing food insecurity by providing access to healthy foods and increased security, which can also reduce barriers to managing PCOS with diet. One of the best places to find fresh produce, including fruits and vegetables, is at local farmers' markets. The SNAP program is currently working on expanding access to more nutritious options for recipients while also supporting local farmers and producers. By providing families, including homes with PCOS patients, with fresh produce and access to healthy foods through farmers' markets, the SNAP program supports Americans' diets and overall health (USDA, 2025; Carlson et al., 2018).

Changing one's diet by localizing foods may seem like a minor personal health change, but it can have a significant impact on communities and promote economic growth. For women with PCOS, such local dietary changes can offer nutrient-dense foods that align with the recommended Mediterranean-style diet, alleviating symptoms. Sourcing food locally also results in reduced travel

time, which ensures better quality and fresher produce. Additionally, seasonal fruits and vegetables have a slightly higher nutrient content and are richer in antioxidant vitamins and minerals, contributing to one's overall health. Government assistance programs, such as SNAP, have helped families find resources and encouraged local procurement by connecting them to farmers' markets and co-ops, ensuring everyone has access to locally sourced produce. Overall, local food procurement offers numerous health benefits, as foods are more nutrient-dense, and also brings communities together through farmers' markets and food assistance programs, making the benefits of local foods more accessible to all (McCloskey et al., 2020; USDA, 2025). However, SNAP benefits are often insufficient to entirely supply individuals with more costly produce, which may limit their impact for women with PCOS who require consistent access to more expensive healthy foods.

Those diagnosed with PCOS are often recommended to follow a MedDiet, consisting of a higher intake of both fruits and vegetables, whole grains, and heart-healthy fats. This diet aims to increase the intake of micronutrients and fiber, which are found in fruits and vegetables. Higher amounts of these nutrients can be found in locally sourced, seasonal produce, as the product is most nutrient-dense when ripe. Decreased transport time allows consumers to access fresher produce than is typically found in larger stores. Community Supported Agriculture (CSA) has grown in response to the demand for high-quality, organic, locally grown produce. These CSA programs originated in Europe and Asia in response to the urbanization of farmland and concerns regarding food safety. The current CSA programs introduced in America establish a direct marketing relationship between farmers and consumers, fostering a mutually beneficial relationship where they share both the risks and benefits of food production. These programs have the benefits of being helpful for those already diagnosed with chronic illnesses, such as PCOS, and being a preventive measure to avoid chronic disease and increase overall health by accessing fresher produce (Moran et al., 2015; Vasquez et al., 2017).

Policies to Leverage Price and Promote Healthy Eating

In addition to treating PCOS through approaches that increase access to healthier diets, governments can employ greater population-level pricing policies to mitigate the effects of PCOS. This provides a greater benefit for the PCOS community, as it encourages individuals to make healthier dietary choices to minimize the impact of their condition (Itria et al., 2021). A study conducted by White et al., demonstrated that an increase in the price of soda, a beverage high in processed sugar, has led to a reduction in the number of individuals purchasing soda in Oakland, California. According to their study published in PLOS Medicine, purchases of sugar-sweetened beverages dropped by 26.8% when the one-cent-per-ounce tax took effect (White et al., 2023). In this study, White et al. have demonstrated that compared to control groups in Richmond, Virginia, which do not have this tax, consuming sugar-sweetened beverages is associated with a higher risk of obesity, type 2 diabetes, and cardiovascular disease, all of which are associated with PCOS. Additionally, research has shown that Oakland, California, has been successful in reducing the risk of diabetes and weight gain in its population (White et al., 2023). These results can also be applied to dietary policies related to PCOS. Governments can create policies to implement the additional one-cent tax on foods that exacerbate the symptoms of PCOS, such as processed foods and those

high in saturated fats. By ensuring that women can maintain a healthy diet, their symptoms of PCOS can be minimized. Therefore, this increased cost will provide them with a disincentive to eat unhealthy, sugary foods. On the other hand, a decreased cost of healthier foods may incentivize healthy eating.

In addition to taxing unhealthy products, governments could use revenue from these taxes to subsidize minimally processed foods such as vegetables. Simulation evidence suggests that pairing taxes with subsidies can reduce consumption of ultraprocessed foods and increase the fruit, vegetable, and protein intake in low-income households, who are disproportionately affected by PCOS (Valizadeh & Ng, 2024). By encouraging healthier food consumption, such taxes and subsidies would make diets beneficial for PCOS, such as the MedDiet, more accessible, helping PCOS patients manage their symptoms as well as supporting the health of the greater population.

Community Exercise Programs for Movement and Awareness

The Effect of Exercise on PCOS

Methods of exercise have also been proven to be efficient in combating the phenotypic symptoms of PCOS. The action of exercise has been situationally defined as any repetitive, structured bodily movement generated by the skeletal muscles within the body that results in the consumption of energy (Sabag et al., 2024). Exercise is considered a modality of treatment for PCOS due to its role in reducing the concentration of adipose tissue in the body, which is partly linked to the severity of symptoms and certain co-existing conditions. Adipose tissue is found throughout the body and works to store energy and insulate the body from heat. However, an abnormal amount of fat deposits surrounding vital organs, specifically the abdomen, contributes to several comorbidities associated with PCOS.

Such fat deposits are referred to as visceral fat, which is stored deep within the abdominal cavity and organs, and subcutaneous fat, which is stored directly below the skin in areas such as the stomach, thighs, and hips. Visceral fats remain metabolically active and contribute to hormone production and transport, which significantly impact metabolic functions when overcapacity occurs (Mittal, 2019). An improper structure of both physical activity and diet only adds to these stores. A calculation of body fat percentage (BFP) can be utilized to target these areas. Despite standard measures of body mass index (BMI) being used for determining a person's status regarding their weight, BMI cannot account for muscle mass in accordance with fat, determining BFP as the most sufficient marker of metabolic inflammation and fat accumulation in individuals with PCOS (Hestiantoro et al., 2018). By targeting the percentage of adiposity in an affected individual through physical activity, there is evidence of a reduced risk of IR, hyperglycemia, and hyperandrogenism, all factors that, when treated, can result in substantial recovery from the medical characteristics associated with PCOS (Xu & Qiao, 2022).

Additional factors, including the role of adenosine monophosphate-activated protein kinase (AMPK) and skeletal muscle insulin signals, work to regulate glucose uptake and processing of insulin post-physical activity, which actively combats several effects of hyperinsulinemia. Following intense and high-volume exercise, an activated AMPK enhances both glucose uptake

and insulin sensitivity, leading to skeletal muscles producing an altered version of insulin gene expression that replicates healthy metabolic signaling in unaffected individuals (Sabag et al., 2024).

Maintained aerobic exercise regulates other hormones often imbalanced in women with PCOS. This includes lowering leptin, which is positively correlated with body weight in PCOS-affected women and linked to poor weight management. Furthermore, other hormones elevated in women with PCOS, such as the inflammatory hormone interleukin-6, were significantly reduced. By regulating these hormones in PCOS, women may see improvement in symptoms such as IR, leptin resistance, and inflammation (Souza et al., 2022).

Physical activity has been shown to significantly reduce the inflammatory responses associated with PCOS. Even minor weight losses, ranging from 5% to 10% of one's body weight, have been shown to significantly reduce the metabolic and reproductive effects of PCOS and are therefore considered the primary form of treatment for alleviating symptoms (Fong et al., 2021).

The Effectiveness of Community Exercise

To promote beneficial exercise, community-based exercise programs developed by larger organizations and led by local officials may effectively improve PCOS symptoms and raise PCOS awareness in the broader community. Currently, several free, effective community physical activity programs catered to other chronic diseases exist, such as the United Kingdom's Pulmonary Rehabilitation program, directed towards chronic obstructive pulmonary disease, which has increased patient quality of life and exercise capacity (McCarthy, 2015). These community programs pair trained, certified officials with groups of ten to fifteen people to guide them through helpful exercises and educate them about their health and wellness. One of these programs, effective in American communities, is the Arthritis Foundation's CDC-recommended Walk With Ease (WWE) program. WWE has been shown to be successful in reaching its target audience and increasing physical activity among participants, who additionally reported high satisfaction with the program and indicated a high likelihood to continue exercising after its conclusion (Conte et al., 2016). A similar program catered to women with PCOS may also be effective. By guiding patients through cardio and resistance exercises, the program would enable women to engage in physical activity within a supportive framework. Similar to other exercise initiatives, such as WWE, a PCOS exercise program could also raise health awareness among its participants through education implemented throughout the program (Martin et al., 2023). This is especially beneficial for PCOS, a chronic disease that both people with and without a PCOS diagnosis have misconceptions about. For example, one study found that PCOS-afflicted women often have misconceptions about its diagnostic criteria (Lin et al., 2018). Such a program would also be largely cost-efficient, as volunteers could support it and require no specialized equipment (Conte et al., 2016).

Future Research Direction

Although diet and exercise can alleviate PCOS symptoms, more evidence is needed on how suggested community-based strategies perform in real-world contexts and in the long term. Future

research should look at larger-scale trials to examine if food access initiatives, such as SNAP, can be effectively used by PCOS patients to mitigate symptoms such as insulin resistance. Government policy evaluations should also test the long-term effectiveness and viability of pricing policies such as taxes and subsidies to encourage healthy eating. Future works should also separate results by factors such as socioeconomic status, race, and PCOS phenotype to ensure a comprehensive understanding of how such interventions work for different PCOS-affected groups.

The impact of community group exercise programs also warrants further study. While programs for other chronic illnesses, such as arthritis and chronic obstructive pulmonary disease, have shown success, programs tailored to women with PCOS are underresearched. Looking forward, studies should compare the effectiveness of different exercise types and delivery methods to see which are most sustainable and supportive for PCOS patients. Such future studies may show that exercise programs for PCOS are not only clinically effective for alleviating symptoms but are also accessible sources of health information for communities.

Conclusion

Polycystic ovary syndrome (PCOS) is a chronic condition that affects millions of women worldwide with symptoms including insulin resistance, infertility, and metabolic complications. Scientists have shown that these effects can be mitigated through a balanced diet and regular physical activity. Diets such as the Mediterranean diet (MedDiet), a ketogenic diet (KD), Dietary Approaches to Stop Hypertension (DASH), Low-GI Diets, and the Pulse-Based Diet (PBD) have demonstrated a decreased risk of obesity, metabolic, and reproductive dysfunction, which are effects of PCOS. Such diets can be encouraged in communities through food assistance programs, working with local farmers, and the taxation of unhealthy food items. Additionally, community-based exercise initiatives, similar to the Walk With Ease (WWE) program, can be utilized by individuals with PCOS to reduce insulin resistance, hyperglycemia, and hyperandrogenism. By implementing these strategies, the United Nations Sustainable Development Goal of Good Health and Well-being and the USDA AFRI research priority area of Food Safety, Nutrition, and Health can be further developed and worked towards. However, it is crucial to understand that these strategies are not an overall solution to PCOS, but rather a way to relieve individuals from the negative impacts of the condition. Moreover, because PCOS exhibits multiple phenotypes, indicating that individuals may respond differently to strategies, and the limited research available into techniques such as exercise programs for PCOS, future research is needed to create a more rigorous and comprehensive understanding of the effects of these strategies on PCOS.

References

Ajorlouie, Z., Moshkian, P., Baghdadi, G., Amiri, R., Biglari, F., & Rahimlou, M. (2025, April 16). The association between the Mediterranean Diet and the Prime Diet Quality Score and polycystic ovary syndrome: A case control study. *BMC Nutrition*, *11*(1). https://doi.org/10.1186/s40795-025-01067-5

Carlson, S., & Keith-Jennings, B. (2018, January 17). *SNAP is linked with improved nutritional outcomes and lower health care costs*. Center on Budget and Policy Priorities.

https://www.cbpp.org/research/snap-is-linked-with-improved-nutritional-outcomes-and-lower-health-care-costs

Che, X., Chen, Z., Liu, M., & Mo, Z. (2021, October 5). Dietary interventions: A promising treatment for polycystic ovary syndrome. *Annals of Nutrition and Metabolism*, *77*(6), 313-323. https://doi.org/10.1159/000519302

Conte, K. P., Odden, M. C., Linton, N. M., & Harvey, S. M. (2016, September 4). Effectiveness of a scaled-up arthritis self-management program in Oregon: Walk With Ease. *American Journal of Public Health*, *106*(12), 2227-2230. https://doi.org/10.2105/ajph.2016.303478

Devirgiliis, C., Guberti, E., Mistura, L., & Raffo, A. (2024, October 2). Effect of fruit and vegetable consumption on human health: An update of the literature. *Foods*, *13*(19), 3149. https://doi.org/10.3390/foods13193149

Ditano-Vázquez, P., Torres-Peña, J. D., Galeano-Valle, F., Pérez-Caballero, A. I., Demelo-Rodríguez, P., Lopez-Miranda, J., Katsiki, N., Delgado-Lista, J., & Alvarez-Sala-Walther, L. A. (2019, November 19). The fluid aspect of the Mediterranean diet in the prevention and management of cardiovascular disease and diabetes: The role of polyphenol content in moderate consumption of wine and olive oil. *Nutrients*, *11*(11), 2833. https://doi.org/10.3390/nu11112833

Ee, C., & Tay, C. T. (2024, August 20). Pharmacological management of polycystic ovary syndrome. *Australian Prescriber*, *47*(4), 109-112. https://doi.org/10.18773/austprescr.2024.030

Fong, S. L., Douma, A., & Verhaeghe, J. (2021, June). Implementing the international evidence-based guideline of assessment and management of polycystic ovary syndrome (PCOS): How to achieve weight loss in overweight and obese women with PCOS? *Journal of Gynecology Obstetrics and Human Reproduction*, 50(6), 101894. https://doi.org/10.1016/j.jogoh.2020.101894

French, S. A., Tangney, C. C., Crane, M. M., Wang, Y., & Appelhans, B. M. (2019, February 26). Nutrition quality of food purchases varies by household income: the SHoPPER study. *BMC Public Health*, *19*(231). https://doi.org/10.1186/s12889-019-6546-2

Hestiantoro, A., Kapnosa Hasani, R. D., Shadrina, A., Situmorang, H., Ilma, N., Muharam, R., Sumapraja, K., & Wiweko, B. (2018, October 16). Body fat percentage is a better marker than body mass index for determining inflammation status in polycystic ovary syndrome. *International Journal of Reproductive Biomedicine*, *16*(10), 623-628. https://pubmed.ncbi.nlm.nih.gov/30643854

Hochberg, A., Badeghiesh, A., Baghlaf, H., Tseva, A. T., & Dahan, M. H. (2023, October 19). The effect of socioeconomic status on adverse obstetric and perinatal outcomes in women with polycystic ovary syndrome—An evaluation of a population database. *International Journal of Gynecology & Obstetrics*. https://doi.org/10.1002/ijgo.15201

Itria, A., Borges, S. S., Rinaldi, A. E. M., Nucci, L. B., & Enes, C. C. (2021, July 5). Taxing sugar-sweetened beverages as a policy to reduce overweight and obesity in countries of different income classifications: A systematic review. *Public Health Nutrition*, *24*(16), 5550-5560. https://doi.org/10.1017/s1368980021002901

Juhász, A. E., Stubnya, M. P., Teutsch, B., Gede, N., Hegyi, P., Nyirády, P., Bánhidy, F., Ács, N., & Juhász, R. (2024, February 22). Ranking the dietary interventions by their effectiveness in the management of polycystic ovary syndrome: A systematic review and network meta-analysis. *Reproductive health*, *21*(1), 28. https://doi.org/10.1186/s12978-024-01758-5

Jurczewska, J., Ostrowska, J., Che-chowska, M., Panczyk, M., Rudnicka, E., Kucharski, M., Smolarczyk, R., & Szostak-W-gierek, D. (2023, August 20). Abdominal obesity in women with polycystic ovary syndrome and its relationship with diet, physical activity and insulin resistance: A pilot study. *Nutrients*, *15*(16), 3652. https://doi.org/10.3390/nu15163652

Kakoly, N. S., Khomami, M. B., Joham, A. E., Cooray, S. D., Misso, M. L., Norman, R. J., Harrison, C. L., Ranasinha, S., Teede, H. J., & Moran, L. J. (2018, March 26). Ethnicity, obesity and the prevalence of impaired glucose tolerance and type 2 diabetes in pcos: A systematic review and meta-regression. *Human Reproduction Update*, *24*(4), 455-467. https://doi.org/10.1093/humupd/dmy007

Lin, A. W., Dollahite, J. S., Sobal, J., & Lujan, M. E. (2017, November 22). Health-related knowledge, beliefs and self-efficacy in women with polycystic ovary syndrome. *Human Reproduction*, *33*(1), 91-100. https://doi.org/10.1093/humrep/dex351

Malhotra, N., Garg, R., & Rawat, A. (2020). Polycystic ovarian syndrome: Role of nutrition, vitamins, and minerals - myoinositol and vitamin d3. *Journal of South Asian Federation of Obstetrics and Gynaecology*, *12*(2), 63-64. https://doi.org/10.5005/jp-journals-10006-1757

Martin, K. R., Stelfox, K., Macfarlane, G. J., McNamee, P., Morrison, Z., Smith, T. O., & Team, W. E. R. S. (2023, June 15). Bringing the walk with ease programme to the UK: a mixed-methods study to assess the relevance, acceptability, and feasibility of implementation for people with arthritis and musculoskeletal conditions. *Translational Behavioral Medicine*, *13*(11). https://doi.org/10.1093/tbm/ibad032

Martínez-González, M. A., Salas-Salvadó, J., Estruch, R., Corella, D., Fitó, M., & Ros, E. (2015). Benefits of the Mediterranean diet: Insights from the PREDIMED study. *Progress in Cardiovascular Diseases*, *58*(1), 50-60. https://doi.org/10.1016/j.pcad.2015.04.003

McCarthy, B., Casey, D., Devane, D., Murphy, K., Murphy, E., & Lacasse, Y. (2015, February 23). Pulmonary rehabilitation for chronic obstructive pulmonary disease. *The Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.CD003793.pub3

McCloskey, M. L., Kesterson, H., Mena, N. Z., Dellaport, J., & Bellows, L. L. (2020, September 19). Farm to early care and education programming: A descriptive study of challenges and opportunities to promote healthful foods to young children. *International Journal of Environmental Research and Public Health*, *17*(18), 6857. https://doi.org/10.3390/ijerph17186857

Mittal B. (2018, October 16). Subcutaneous adipose tissue & visceral adipose tissue. *The Indian Journal of Medical Research*, *149*(5), 571-573. https://doi.org/10.4103/ijmr.IJMR_1910_18

Mohamed, A. H., Albasheer, O., Ghoniem, M. A., Abdalghani, N., Ayish, F., Abdelwahab, S. I., Abdelmageed, M. M., Hakami, A. M. S., Khormi, A. H., Altraifi, A. A., Medani, I., Chourasia, U., Ali, S. A., Abdelmola, A., & Ahmed, A. E. (2025, January 17). Impact of lifestyle interventions on reproductive and psychological outcomes in women with polycystic ovary syndrome: A systematic review. *Medicine*, *104*(3), e41178. https://doi.org/10.1097/MD.0000000000041178

Moran, L., Grieger, J., Mishra, G., & Teede, H. (2015, August 31). The association of a Mediterranean-style diet pattern with polycystic ovary syndrome status in a community cohort study. *Nutrients*, *7*(10), 8553-8564. https://doi.org/10.3390/nu7105419

Oluwadero, J., De Leon, L., Falgowski, M., Holman, E., Kennedy, N., Norris-Bent, M., Patosky, H., Richardson, R., Seibold, M., Tracy, T., Werner, M., VanHorne, S., & Karpyn, A. (2025, April

30). Food is medicine: The effectiveness of Delaware's feeding families program in managing chronic conditions. *Delaware Journal of Public Health*, *11*(1), 10-18. https://doi.org/10.32481/djph.2025.04.04

Patten, R. K., Boyle, R. A., Moholdt, T., Kiel, I., Hopkins, W. G., Harrison, C. L., & Stepto, N. K. (2020, July 6). Exercise interventions in polycystic ovary syndrome: A systematic review and meta-analysis. *Frontiers in Physiology*, *11*. https://doi.org/10.3389/fphys.2020.00606

Rubin, K. H., Andersen, M. S., Abahamsen, B., & Glintborg, D. (2018, December 5). Socioeconomic status in Danish women with polycystic ovary syndrome: A register-based cohort study. *Acta Obstetricia et Gynecologica Scandinavica*. https://doi.org/10.1111/aogs.13514

Sabag, A., Patten, R. K., Moreno-Asso, A., Colombo, G. E., Dafauce Bouzo, X., Moran, L. J., Harrison, C., Kazemi, M., Mousa, A., Tay, C. T., Hirschberg, A. L., Redman, L. M., & Teede, H. J. (2024, October). Exercise in the management of polycystic ovary syndrome: A position statement from Exercise and Sports Science Australia. *Journal of Science and Medicine in Sport*, *27*(10), 668-677. https://doi.org/10.1016/j.jsams.2024.05.015

Sharma, P., Kumar, R., Gupta, M., & Rani, J. (2025, March 12). The role of nutrients in PCOS: An exploration of key nutrients and their impact on PCOS symptoms. *AI-Based Nutritional Intervention in Polycystic Ovary Syndrome (PCOS)*, 89-104. https://doi.org/10.1007/978-981-96-2120-0_3

Souza, H. C. D., Philbois, S. V., Facioli, T. P., Ferriani, R. A., & Gastaldi, A. C. (2022, August 4). Aerobic physical training impact on adipokines in women with polycystic ovary syndrome – Effects of body fat percentage. *Archives of Endocrinology and Metabolism., 66*(6), 837-847. https://doi.org/10.20945/2359-3997000000503

Tay, C. T., Garrad, R., Mousa, A., Bahri, M., Joham, A., & Teede, H. (2023, April 28). Polycystic ovary syndrome (PCOS): International collaboration to translate evidence and guide future research. *Journal of Endocrinology*, *257*(3). https://doi.org/10.1530/joe-22-0232

Teede, H. J., Tay, C. T., Laven, J. J. E., Dokras, A., Moran, L. J., Piltonen, T. T., Costello, M. F., Boivin, J., Redman, L. M., Boyle, J., Norman, R. J., Mousa, A., & Joham, A. E. (2023, August 15). Recommendations from the 2023 international evidence-based guideline for the assessment and management of polycystic ovary syndrome. *European Journal of Endocrinology*, *189*(2), G43-G64. https://doi.org/10.1093/ejendo/lvad096

USDA. (2025, August 28). *Farmers Markets Accepting SNAP Benefits | Food and Nutrition Service*. Usda.gov. https://www.fns.usda.gov/snap/farmers-markets-accepting-benefits

Valizadeh, P., & Ng, S. W. (2024, July). Promoting healthier purchases: Ultraprocessed food taxes and minimally processed foods subsidies for the low income. *American Journal of Preventive Medicine*, *67*(1), 3-14. https://doi.org/10.1016/j.amepre.2024.02.019

Vasquez, A., Sherwood, N. E., Larson, N., & Story, M. (2017, January). Community-Supported agriculture as a dietary and health improvement strategy: A narrative review. *Journal of the Academy of Nutrition and Dietetics*, *117*(1), 83-94. https://doi.org/10.1016/j.jand.2016.09.029

White, J. S., Basu, S., Kaplan, S., Madsen, K. A., Villas-Boas, S. B., & Schillinger, D. (2023). Evaluation of the sugar-sweetened beverage tax in Oakland, United States, 2015–2019: A quasi-experimental and cost-effectiveness study. *PLOS Medicine*, *20*(4), e1004212. https://doi.org/10.1371/journal.pmed.1004212

Woodward, A., Klonizakis, M., & Broom, D. (2020, April 28). Exercise and polycystic ovary syndrome. *Advances in Experimental Medicine and Biology*, 123-136. https://doi.org/10.1007/978-981-15-1792-1_8

World Health Organization. (2025, February 7). *Polycystic ovary syndrome [Fact sheet]*. https://www.who.int/news-room/fact-sheets/detail/polycystic-ovary-syndrome

Xu, Y., & Qiao, J. (2022, March 21). Association of insulin resistance and elevated androgen levels with polycystic ovarian syndrome (PCOS): A review of literature. *Journal of Healthcare Engineering*, *2022*, 1-13. https://doi.org/10.1155/2022/9240569

Yu, O., Christ, J. P., Schulze-Rath, R., Covey, J., Kelley, A., Grafton, J., Cronkite, D., Holden, E., Hilpert, J., Sacher, F., Micks, E., & Reed, S. D. (2023, July). Incidence, prevalence, and trends in polycystic ovary syndrome diagnosis: A United States population-based study from 2006 to 2019. *American Journal of Obstetrics and Gynecology*, *229*(1), 39.e1-39.e12. https://doi.org/10.1016/j.ajog.2023.04.010

Zhang, J., Zhou, K., Luo, L., Liu, Y., Liu, X., & Xu, L. (2018, June 7). Effects of exercise and dietary habits on the occurrence of polycystic ovary syndrome over 5 years of follow-up. *International Journal of Gynecology & Obstetrics*, *142*(3), 329-337. https://doi.org/10.1002/ijgo.12563

Zhang, H., Wang, W., Zhao, J., Jiao, P., Zeng, L., Zhang, H., Zhao, Y., Shi, L., Hu, H., Luo, L., Fukuzawa, I., Li, D., Li, R., & Qiao, J. (2023, January 8). Relationship between body composition, insulin resistance, and hormonal profiles in women with polycystic ovary syndrome. *Frontiers in Endocrinology*, *13*. https://doi.org/10.3389/fendo.2022.1085656