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"Effectiveness Of Lifestyle Modification Package On Polycystic Ovarian Syndrome: A Systematic Review".

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ABSTRACT

Introduction: Polycystic ovarian syndrome was originally described in 1935 by Stein and Leventhal as a syndrome manifested by amenorrhea, hirsutism and obesity associated with enlarged polycystic ovaries. The predisposing risk factors include genetics, neuroendocrine, lifestyle, environment, obesity that contributes to the development of PCOS. The pathophysiological aspect of PCOS mainly focuses on hormonal dysfunction, insulin resistance, and hyperandrogenism leading to impaired folliculogenesis which arise the risk for associated comorbidities like endometrial cancer, type II diabetes etc.

Methods: Quantitative studies published between 2015 and 2025 were undertaken for the systematic review. A comprehensive review of published literature and journal articles from PubMed, Google scholar, and Medline databases was done. Search strategy specific to each database was used. During initial search 1428 titles were retrieved and after screening 12 articles were selected for full text screening. Finally, 12 research articles were selected based on the inclusion criteria**. Results**: All 12 articles of research studies supported that lifestyle modification package on polycystic ovarian syndrome effective in enhancing knowledge on PCOS life style habits, BMI, menstrual pattern and quality of life. **Conclusion**: Lifestyle modification forms the cornerstone of managing polycystic ovarian syndrome (PCOS). Through a holistic approach that includes balanced nutrition, regular physical activity, stress management, and adequate sleep, women with PCOS can achieve significant

improvements in hormonal balance, menstrual regularity, insulin sensitivity, and overall quality of life. Implementing a structured lifestyle modification package empowers individuals to take control of their health, reduce the risk of long-term complications such as diabetes and cardiovascular disease, and improve reproductive outcomes. Therefore, promoting sustainable lifestyle changes should be prioritized as a first-line intervention in the prevention and management of PCOS.

Keywords: Polycystic ovarian syndrome, lifestyle modification package on polycystic ovarian syndrome, adolescent girls.

INTRODUCTION

According to the World Health Organization (WHO) estimation over 116 million women (3.4%) are affected by PCOS worldwide (Bharathi et al., 2017). Globally, the prevalence of PCOS is estimated to be between 5.5% and 12.6% in women in the age group of 17 to 45 years.

In India the prevalence estimates are between 8.2% and 22.5 %. An estimated one in five (20%) Indian women suffer from PCOS. (The Hindu, Mumbai, September 26, 2019).

Several research findings concluded that lack of exercises, sedentary life style and unhealthy diets play an important role in the development of PCOS and their modification remain the first line of treatment.

1.1.Aim

The aim of this narrative review is to highlight the effectiveness of lifestyle modification package on polycystic ovarian syndrome.

Objectives:

- To explore the changes in PCOS Women life style practices, BMI, menstrual pattern and quality of life.
- To assess the effectiveness of lifestyle modification package on polycystic ovarian syndrome.

2. METHODOLOGY

2.1. Search Strategy methods

An electronic search of articles published in various journals from 2015 to 2025 was conducted. Search was restricted to only English language. The database search done was PubMed, Medline and Google scholar.

2.1.1. Types of Interventions:

Exercise and nutritional counselling, Lifestyle Modification Package, Video Assisted Teaching Programme, Multimodular Interventions of Lifestyle Modification, Life style modification regimen.

2.1.2. Types of Studies:

A randomized controlled trial with a pre-test and post-tests design, One-group repeated measurement experimental design, quasi-experimental and one group pretest post-test Experimental design.

2.1.3. Type of Participants:

Adolescent girls, PCOS Women

2.1.4. Settings

Educational institutions, Paramedical colleges, Hospitals.

2.1.5. Outcomes:

Enhancing knowledge, lifestyle practices, menstrual pattern, BMI and quality of life among PCOS women.

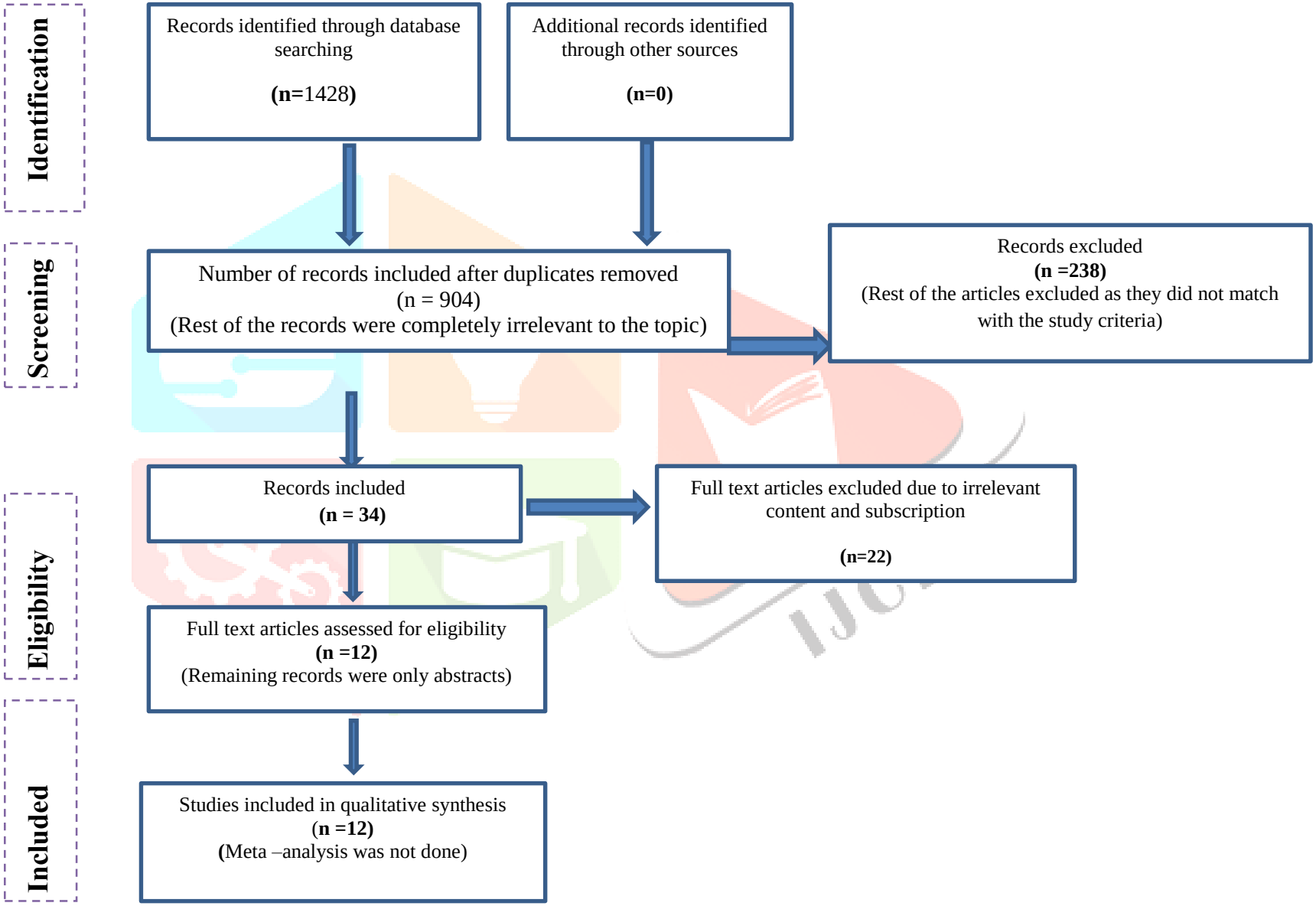
2.1.6. Delivery of Interventions

The systematic search was conducted by framing the terms individually and in combination with all and synonyms, also according to the database. In addition to this, a manual google scholar search was undertaken using the keywords and search synonyms from already found articles.

Initial search retrieved 1428 articles over which articles were selected manually. Duplicates were removed and reviewed 34 articles for eligibility. 22 articles were excluded because of irrelevant content and subscription. Hence twelve articles were screened which includes quantitative studies.

3. RESULTS:

3.1. PRISMA FLOW CHART



3.2. Table no.1*: Data Extraction table*

Sl.N and Author	Source and title	Country	Variables	Instruments	Sample and sampling technique	Design	Duration	Findings	Conclusion
1.Selvaraj V, Vanitha J, Dhanraj FM (2020)	Awareness programme and intervention of lifestyle on PCOS in adolescent girls in India	India	Independent variable- Awareness and lifestyle modification like yoga and exercise Dependent variable- knowledge.	Knowledge questionnaire	40 20 in intervention group 20 in control group.	Quasi-experimental design	7 days	Pre-test assessment revealed 80% of experimental and 75% of control group had moderate knowledge and the post-test after intervention shows 75% found adequate knowledge	The findings showed improvement in knowledge upon educational intervention. So it should be incorporated for school going adolescents as an education. module for helping early identification and

								in experimental group, 45 % had adequate knowledge in control group.	prevention.
2. Bruner B, Chad K, and Chizen D	A study evaluated the exercise and nutritional counselling effect in women on reproductive function, menstrual and hormonal, with polycystic ovary syndrome	Canada	Independent variable: Endurance and resistance exercise plus nutritional counselling (EN) or nutritional counseling only. Dependent variable: Anthropom	Body composition analyses (BMI, WG, sum of 2 skinfolds); tests for insulin sensitivity, androgen levels, fasting lipid levels, cardio respiratory fitness, resting meta-bolic rate,	12	Randomized Control Group trial	12 weeks	Pre and post intervention, the aspects measured were resting metabolic rate, hormones, ovarian follicle and anthropometry. The interventio	This research suggested nutritional counselling and exercise will reduce the metabolic and reproductive abnormalities of PCOS

	(PCOS).		etry, resting metabolic rate (RMR), selected hormones.	ovarian follicle population; and documentation of menstrual history and nutritional practices.				n for twelve-week reduced skin folds, increased VO2 max in exercise group. Girth of the waist and level of insulin was reduced in both groups. Changes in the hormone occurred for most of the participants in the absence of	

								weight loss.	
3.Zeinab R. AL Kurdi, Nadia M. Fahmy, Shaida H. Mohasb, Nadia Abd Alhamid 2021.	Effect of Educational Programme on Lifestyle among Paramedical Students with Polycystic Ovarian Syndrome.	Jordan	Independent variables: Educational Programme on Lifestyle.	Identification of student with PCOS. Part-1 Clinical parameters of PCOS, which included hirsutism, acne, and acanthosis nigricans, Part-2: Biochemical parameters of PCOS. II.POCS Structured Interviewing Questionnair	68 students, purposive sampling technique.	A Quasi-experimental (pre-test & post-test) design.	6 months	The study findings revealed that a highly significant difference regarding the student's knowledge about the PCOS as compared pre, post, and follow-up program results. Also, there was a significant improvem	The results of the study show students who attendance the educational program regarding polycystic ovarian syndrome, will be improve their knowledge scores and their lifestyles. Applying screening program for PCOS in young

				e. III.Assessment of Lifestyle Habits Tool. IV: Follow up sheet. V: Psychological Assessment Tool.				ent in the student's lifestyle habits after applying to the educational program compared to before applying them.	students is a very important to reduce the long-term health complications associated with PCOS.
4. Anjana Devi G. (2017)	A study to assess the effectiveness of Information Education and Communication (IEC) on knowledge regarding	Theni, Tamil Nadu. India.	Independent variable: Information Education and Communication (IEC) regarding Polycystic Ovarian Syndrome.	Structured multiple-choice questionnaire on demographic variables and knowledge regarding polycystic ovarian syndrome.	60 adolescent girls using non probability convenient sampling	Pre experimental one group Pre-test and Post-Test design	7 days	Majority of 86.7% of the adolescent girls had adequate knowledge, moderate Knowledge observed on the	This study finding conclude that Information Education and Communication was effective in improving knowledge regarding polycystic

	Polycystic Ovarian Syndrome among adolescent girls in a selected college at Theni.		Dependent variable: Level of knowledge regarding polycystic ovarian syndrome:					11.7% from adolescent girls and only 1.7% had inadequate knowledge. Analysis used paired 't'test found significant value at p <0.01 level.	ovarian syndrome among adolescent girls.
5. Aarthi. A (2019)	Study to assess the effectiveness of video Assisted teaching programme on awareness	Madhurai, Tamilnadu, India.	Independent variable- Video assisted teaching programme regarding	Structured questionnaire and modified attitude scale regarding early identification	Total of 60 students. Control group (n=30) and	Quasi-experimental pretest-post-test control group design.	7 days	The obtained post-test awareness "t" value was 15.95, between	The findings indicate that, video teaching program is an effective intervention

	And attitude regarding early identification And management of polycystic ovarian Syndrome among adolescent girls in Selected colleges at Madurai.		early identification and management of polycystic ovarian syndrome. Dependent variable- Level of awareness and attitude regarding early identification and management of polycystic ovarian syndrome	and management of PCOS	experimental group (n=30) through non-probability convenience sampling technique.			experimental and control group which was statistically highly significant at p<0.001 level. The obtained posttest attitude "t" value between experimental and control group was 15.20, which was statistically highly	in improving the level of awareness and attitude regarding PCOS. Video teaching program is found to be affordable, comfortable and effective.

								significant at p<0.001 level.	
6. Vanitha Innocent Rani, Sharan Sophia. (2015)	A study to assess the effectiveness of Lifestyle Modification Package on knowledge and attitude regarding weight reduction among women with PCOS at Janet Nursing Home, Trichy	Trichy, Tamil Nadu. India.	Independent variable: Lifestyle modification package. Dependent Variables: Knowledge and attitude regarding weight reduction.	Self-administered knowledge questionnaire and 5-point Likert scale was used to assess the knowledge and attitude of the sample.	40 women with PCOS. Non probability convenience sampling technique was chosen for this study.	Quasi experimental study.	7 days	Finally, the statistical analysis revealed that, the calculated paired t test value for knowledge (t=22.07) and attitude (t=19.74) had a significant difference between the pre	The results showed that there was a significant difference between pre and post-test levels of knowledge and attitude this indicated the given Life Style Modification Package was effective.

								and post-test levels of knowledge and attitude of the women with PCOS at 0.05 level of significance.	
7.B Batra, Sangeeta Tiwari. (2018)	An Experimental Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge of Adolescents	Ujjain, Madhya Pradesh, India.	Independent variable- Planned Teaching Programme on Polycystic Ovarian Syndrome.	Semi structured questionnaire	30 adolescents' girls by convenient sampling technique	Quantitative approach with one group pretest post-test Experimen	15 days	The result revealed that in pretest 50% girls had poor knowledge, 40% girls had	The study concluded that planned teaching programme on polycystic ovary syndrome is useful tool

	Girls of Higher Secondary School Age Group (14-17 Years) Regarding Polycystic Ovarian Syndrome at Vijaya Raje Government Girls School, Ujjain, Madhya Pradesh.		Dependent variable- Level of knowledge on polycystic ovarian syndrome.			tal design		average knowledge and 10% girls had good knowledge. In post-test knowledge score75% girls had good knowledge, 25% girls had average knowledge and 0% girls had poor knowledge.	for improving knowledge of adolescent girls and it may be used by health care provider for improving knowledge regarding any areas of education.
8.Pramila D'Souza1, Devina	Effectiveness of Multimodular	Mangalore, Karnatak	Independent variable-	Baseline proforma, Body Mass	15 subjects for the	Quasi-experimental study	6 months	A statistically	The multinodular interventions

ERodrigues, Raja Gopal Kaipangala, Kunnath Chacko Leena.	Interventions of Lifestyle Modification on Symptoms of Polycystic Ovarian Syndrome and Quality of Life among Women- A Pilot Study	a, India	The multimodular interventions (diet, exercises, and behavioural modifications) Dependent variable- Quality of Life.	Index (BMI), Waist-hip ratio, Acne, Fasting Blood Glucose (FBG), modified Ferriman and Gallwey Scale, World Health Organisation Quality of Life questionnaire	intervention group and 15 for the control group. Purposive sampling technique.	with two groups (the control - and intervention).		significant increase in quality of life observed in the intervention group (p-value <0.001) whereas in the control group there was no change.	were found to be effective in reducing the clinical symptoms of PCOS like hirsutism acne and the quality of life steeply improved after 6 months of these interventions in PCOS women.
9. Hemavathi P, Malathi S. 2025	Life style modification regimen on polycystic ovary syndrome among adolescent girls	India	Independent variable- Life style modification regimen. Dependent variable- Body	Modified PCOS risk assessment checklist, Self-administered questionnaire on	153 Adolescent girls with moderate risk of PCOS and BMI 23 and above.	Quasi experimental one group pre and posttest time series design	Four months	Significant reduction in the PCOS risk score was observed. Lifestyle habits	The study showed LSMR plays vital role in the control and management of PCOS.

			weight, acne, BMI, Menstrual pattern,	demographic variables, Five-point rating scale on dietary habits, Five-point rating scale on physical activity, anthropometric variables, structured interview schedule on menstrual pattern. Global acne grading scale.				show mean difference of dietary habit and Physical activity score Anthropometric measurements shows that mean difference of body weight and BMI as‘t’ value was 27.897 and 16.597, at p <0.01 respectively. There was improvem	

								ent in acne and menstrual pattern also after LSMR.	
10. Anju Krishnan Nair, Bindu Nambisan, Sreekumary Radha, Jayasree Leelamma (2017)	Effectiveness of lifestyle modification package among overweight and obese adolescent girls between 15-19 years with polycystic ovarian syndrome	India	Independent variable- lifestyle modification package including dietary modification and exercise. Dependent variable: BMI, Menstrual cycle, body fat, W/H ratio.	Questionnaire containing socio-demographic details, symptoms of PCOS in detail. General examination findings and a detailed medical history, anthropometry, relevant gynaecological history, medical	144 adolescent girls diagnosed as PCOS as per Rotterdam criteria.	Quasi Experimental study (Before and after study)	6 months	Significant weight loss was seen in participants There was significant change in BMI of the girls and significant improvement in menstrual cycle after 6 months. There was	Lifestyle modification is a simple, cost-effective treatment in the management of overweight and obese adolescent PCOS in improving their BMI and regularization of menstrual cycles.

				history, family history of PCOS.				significant reduction in body fat% and W/H ratio.	
11. Abobakr Ibrahim, Asmaa Ghoneim, Hanan M, Elsaid, Noha M Abu Bakr Shalaby, Nagat Salah. (2021)	Effectiveness of Lifestyle Modification on Health-Related Quality of Life among Women with Polycystic Ovary Syndrome	Egypt	Independent variable-Healthy lifestyle modification educational sessions included nutritional guidelines for PCOS, physical exercise (walking for 30 min five times weekly), and instructions	Interviewing questionnaire for assessing the demographic characteristics and a standardized HRQoL questionnaire.	124 women with PCOS. Educational group (n = 62) and a control group (n = 62)	Quasi-experimental research design. Women were randomly assigned into two groups (educational and control groups).	6 months	The mean (SD) of HRQoL score was 97.52 (8.75) in the educational group higher than the control group 87.32 (18.68) at 3 months postintervention and at 6 months	Structured educational sessions about lifestyle modification effectively improved the HRQoL among women with PCOS. Continuous health education for girls in schools about a healthy lifestyle to avoid the

			to relieve stress. Dependent variable- Health-Related Quality of Life					postintervention; it reached 106.74 (11.53) in the educational group and 89.47 (22.14) in the control group. They were statistically significant after intervention (3 and 6 months) between studied groups.	occurrence of PCOS, and women with PCOS should receive structured education about lifestyle modification alongside treatment to ensure improvement, particularly in the context of patient-centred care.
12. Fatemeh Nahidi1,	The	Tehran,	Independent variable-	The Ferriman–	120	A cluster-ran	6-12	Changes in primary	This lifestyle program may

Fahimeh Ramezani Tehrani, Delaram Ghodsi, Mahdi Jafari,Hamid Alavi Majd, Somayeh Abdolahian. (2021).	effectiveness of lifestyle training program promoting adolescent health with polycystic ovarian syndrome.	Iran.	lifestyle training program Dependent variable: clinical symptom measurement, menstrual cycle regularity, hirsutism status and blood biomarkers.	Gallwey scale, Physical activity will be measured using the International Physical Activity Questionnaire (IPAQ), Blood bio markers, Sonography.	Stratified randomization by cluster method.	domized controlled trial.	months	and secondary outcomes in PCOS and healthy adolescents before and after intervention in the intervention and control groups will be analysed.	provide valuable information relating to the development of other healthy lifestyle interventions for PCOS and result in appropriate behavior change and self-management strategies.

3.3. Summary of findings:

The available literature refined to get 12 quantitative studies.

All 12 articles supported that lifestyle modification package on polycystic ovarian syndrome effective in enhancing knowledge life style habits, BMI, menstrual pattern and quality of life.

4. DISCUSSION:

Legro RS et al., 2015- Randomized controlled preconception trial shows a structured preconception lifestyle intervention in overweight/obese women with PCOS improved metabolic parameters and increased ovulation rates in some analyses, supporting weight-loss and lifestyle change before fertility treatment. One of the larger RCTs showing clinical reproductive and metabolic benefits of preconception lifestyle work in PCOS

Research on adolescents (Nair et al., 2016; Chaudhari et al., 2018) highlights the importance of early prevention and awareness. Studies demonstrate gaps in awareness and adherence (Pitchai et al., 2016), emphasizing the role of nurses and educators in sustained behaviour change.

Several Indian studies conducted between 2015 and 2025 have highlighted the effectiveness and importance of lifestyle modification in the management of polycystic ovarian syndrome (PCOS).

Pitchai et al. (2016) conducted an exploratory study among women in Mumbai and Navi Mumbai to assess awareness about lifestyle changes in PCOS and found that although most participants were aware of the benefits of exercise and dietary control, only a small proportion practiced them regularly. This reveals a significant gap between awareness and implementation, emphasizing the need for continuous health education by nurses.

Nair et al. (2016) evaluated the effectiveness of a lifestyle modification package among overweight and obese adolescent girls with PCOS in Kerala and reported remarkable improvements in weight reduction, body mass index, and menstrual regularity after six months of intervention.

Similarly, Bannigida et al. (2019) examined lifestyle patterns among women with PCOS in Karnataka and found that sedentary behavior and poor dietary habits were key contributing factors, suggesting the necessity of lifestyle counseling.

Chaudhari et al. (2018) and Rozati et al. (2021) reported that the prevalence of PCOS among young Indian women was increasing and directly related to unhealthy lifestyle behaviors such as irregular diet and lack of physical activity.

Further, Kumar et al. (2022) demonstrated that structured lifestyle programs significantly reduced BMI, waist circumference, and testosterone levels, while Sharma et al. (2023) found that lifestyle modification, when combined with pharmacotherapy, improved metabolic and menstrual parameters.

A recent study by Thomas et al. (2024) highlighted the effectiveness of nurse-led lifestyle education programs in improving knowledge and compliance among women with PCOS. Collectively, these studies provide strong evidence that lifestyle modification is a safe, cost-

effective, and sustainable first-line management strategy for PCOS, reinforcing the critical role of nurses in promoting health education, behavior change, and long-term disease prevention in the Indian context.

Recent evidence (Kumar et al., 2022; Sharma et al., 2023) confirms that structured lifestyle programs improve insulin sensitivity, menstrual regularity, and BMI.

Nurse-led education programs (Thomas et al., 2024) show significant improvement in knowledge and compliance among women with PCOS.

4.1. Importance in Education

Lifestyle modification packages for polycystic ovarian syndrome (PCOS) hold significant importance in nursing education, as they prepare future nurses to provide effective, evidence-based, and holistic care. Through educational programs, nursing students gain comprehensive knowledge about the causes, symptoms, and complications of PCOS, along with the crucial role of lifestyle changes in its management. This learning helps students understand the importance of preventive health measures such as balanced nutrition, regular exercise, and stress management in promoting women's reproductive health. Incorporating lifestyle modification education also enhances students' counselling and communication skills, enabling them to guide and motivate women to adopt healthy behaviours. Moreover, it encourages evidence-based practice by integrating research findings related to diet, physical activity, and behavioural interventions into nursing care. It also fosters a holistic and health-promoting attitude, empowering nurses to address not only the physical but also the psychological and social aspects of PCOS. Therefore, including lifestyle modification packages in nursing education is essential to develop competent, knowledgeable, and empathetic nurses who can effectively promote women's health and well-being across clinical and community settings.

4.2. Importance in Nursing Practice

In nursing practice, implementing lifestyle modification packages for PCOS is essential for improving health outcomes, preventing complications, and enhancing the quality of life of affected women. Nurses, being primary care providers and health educators, are in a key position to guide and support women in adopting healthy behaviours. It strengthens the nurse's role as an educator, counsellor, and advocate in women's health.

4.3. Limitations

- Database search was limited
- Search strategy was refined to life style modification package on PCOS
- Meta- analysis will give more accuracy
- Confined to area of Nursing and medical literatures.

CONCLUSION

Lifestyle modification forms the cornerstone of managing polycystic ovarian syndrome (PCOS). Through a holistic approach that includes balanced nutrition, regular physical activity, stress management, and adequate sleep, women with PCOS can achieve significant improvements in hormonal balance, menstrual regularity, insulin sensitivity, and overall quality of life. Implementing a structured lifestyle modification package empowers individuals to take control of their health, reduce the risk of long-term complications such as diabetes and cardiovascular disease, and improve reproductive outcomes. Therefore, promoting sustainable lifestyle changes should be prioritized as a first-line intervention in the prevention and management of PCOS.

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