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Investigating the Efficacy of Myo-Inositol in Adolescents with Polycystic Ovary Syndrome: A Scoping Review

Mariam Sharobeem
Rowan University

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School of
Osteopathic Medicine

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Introduction

- Polycystic ovary syndrome (PCOS) affects approximately 6 to 13% of adolescent girls in the United States.[1, 6]
- Key diagnostic features of PCOS include irregular menstruation, infertility, obesity, hirsutism, increased risk of diabetes mellitus, hypertension, lipid abnormalities and metabolic syndrome.[12]
- Currently, there are no pharmacological therapies approved by the FDA to treat PCOS.[5,8,11] The treatment modalities available includes symptom management with medications like combined oral contraceptive pills (COCs), metformin and anti-obesity agents.[6]
- Recently, more discussion about the lack of PCOS treatment has been circulating social media sites like TikTok and YouTube; platforms that have large adolescent audiences. With this discussion, there has been a large focus on using myo-inositol (MI), a supplement that is available over the counter, to treat PCOS. [10,17]
- MI is a manufactured derivative of the body's inositol that is used to reduce insulin resistance, improve ovarian function and lower androgen levels in females with PCOS.[4,13,16]
- Understanding the efficacy of MI is vital across all medical specialties, as its mechanism affects the entire body and overall health.

Aim

The aim of this scoping review is to research the published literature concerning the efficacy of myo-inositol in the treatment of PCOS among adolescent females.

Hypothesis

Myo-inositol supplementation leads to a significant improvement in insulin resistance, ovarian function, and reduction in measured androgen levels in individuals with PCOS.

Methods

- A systematic search of PUBMED, SCOPUS and Science Direct was conducted by following the "preferred reporting items for systematic reviews and meta-analysis" (PRISMA).
- Key words "PCOS adolescents myo-inositol treatment" were used. Search was restricted to U.S articles published on or after 01/01/2009.
- Abstracts or case reports were excluded from the analysis. Selection process is displayed in Figure 1 (Flowchart).

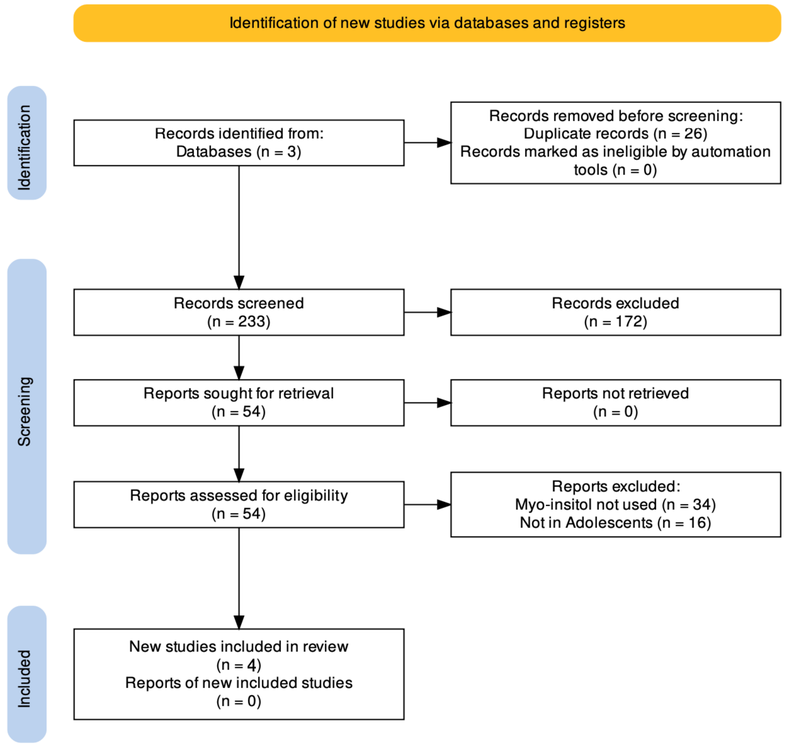

Figure 1: PRISMA Flow Chart Illustrating the Scoping Review Selection Process

References

Results

- 233 articles were screened at the title and abstract level.
- 54 articles were selected for screening at the full-text level.
- 4 articles were included in the final analysis.

Study	Location	Conclusion
Genazzani *et al.* [3]	Italy	Insulin resistance improved in both lean and obese PCOS females with MI supplementation.
Costantino *et al.* [7]	Italy	MI treatment showed a decreased amount of circulating insulin and serum total testosterone.
Pkhaladze *et al.* [14]	Georgia	Administration of MI was shown to be safe in treating metabolic disorders in teenagers affected by PCOS. Combining MI and COCs increase antiadrenergic effects and cancel out the weight gain side effect from COCs.
Artini *et al.* [2]	Italy	MI treatment showed reduction in the hyperinsulinemia state that affects LH secretion.

Limitations

- Number of published studies
- Lack of data specifying the age of their female patients
- MI compliance was not discussed in the articles

Conclusions

- Literature suggests MI is an effective treatment for PCOS. It can also be used as an adjunctive form of therapy with COCs.[14]
- MI shows to be a promising treatment that may help bridge gaps in United States Health Care
  - MI is available over the counter, bypassing physician visit cost.[9]
  - MI is less costly than current prescription management protocols (i.e. COCs, Metformin) [9]
- Further research should include both adult and adolescent populations in the United States, MI effect on patient's mood, and adolescent impression of MI supplementation with its exposure through social media.