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Individual-based meta-analysis of gut microbiota in different subtypes polycystic ovary syndrome patients and their gut microbiota-based predictive biomarkers

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ADMINISTRATIVE INFORMATION

Support - National Natural Science Foundation of China(82260304).

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 September 2024 and was last updated on 24 September 2024.

INTRODUCTION

Review question / Objective P (Population) : PCOS patients; I (Intervention) : No intervention; C (Comparison) : PCOS patients and healthy controls; O (Outcome) : Change of gut microbiota; S (Study design) : Clinical studies, including randomized controls, cohort, case-control, or cross-sectional.

Condition being studied Polycystic ovary syndrome (PCOS) represents a prevalent endocrine disorders affecting numerous females worldwide. Dysbiosis of gut microbiota has been linked to the occurrence of PCOS. However, research into the characteristics of gut microbiota in PCOS patients, especially those from different regions and with/without hyperandrogenism, remains limited.

METHODS

Participant or population Polycystic ovary syndrome patients.

Intervention None.

Comparator Gut microbiota alterations.

Study designs to be included Identifying the alterations of gut microbiota of PCOS patients.

Eligibility criteria Inclusion criteria: 1) Clinical studies, including randomized controls, cohort, case-control, or cross-sectional; 2) Participants are reproductive-aged women; 3) Comparing the gut microbiota of healthy individuals and PCOS patients; 4) The gut microbiota was detected by 16S rRNA gene sequencing; 5) Providing the raw sequencing data of gut microbiota; 6) No drug intervention.

Exclusion criteria: 1) Duplicated articles; 2) Animal studies, reviews or meta-analysis; 3) Studies focused on oral, vaginal or skin microbiota than gut microbiota; 4) No channels to obtain full-text of article. 5) Shotgun metagenomic sequencing; 6) Not provided the raw sequencing data of gut microbiota; 7) Unhealthy controls or patients undergoing drug intervention.

Information sources We searched four electronic databases including PubMed, Web of Science, Cochrane Library, and ClinicalTrials.gov from Jan 1, 2010 to May 1, 2024.

Main outcome(s) PCOS-related symptom and gut microbiota.

Quality assessment / Risk of bias analysis A two-author team independently assessed the quality of the eligible literature. A Newcastle-Ottawa scale (NOS) was employed to evaluate the cohort studies. As for NOS scale, it consists of eight items divided into three categories - selection, comparability and outcomes. Generally, NOS ratings of 0-3, 4-6, and 7-9 were categorized as low, medium, and high quality, respectively. The two authors discussed disagreements and consulted a third author (AS) when they couldn't reach an agreement.A two-author team independently assessed the quality of the eligible literature. A Newcastle-Ottawa scale (NOS) was employed to evaluate the cohort studies.

Strategy of data synthesis A standard process was employed to extract data. Specifically, the Microsoft Excel file has been built to capture the key information of literature, including author's name, journal's name, publication year, country where volunteers were recruited, study design, sample size, the general indices of participants, covariates and potential confounding variables, collection and preservation of fecal samples, sequencing techniques, gene sequencing fragments and study outcomes. Data extraction was also completed independently by two authors. If any disagreements were existed, two authors discussed by referring back to the original text and reached a consensus.

Subgroup analysis PCOS patients from different regions; PCOS patients with differrent testosterone level.

Sensitivity analysis Sensitivity analysis was conducted by Review Manager.

Language restriction There were no restrictions on language.

Country(ies) involved China.

Keywords Polycystic ovary syndrome (PCOS); gut microbiota; testosterone; biomarker.

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