

# INPLASY

## Intestinal Diseases as The Early Warning in Diagnosis of Parkinson's Disease – A Meta-Analysis

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### ADMINISTRATIVE INFORMATION

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**Review Stage at time of this submission** - Formal screening of search results against eligibility criteria.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202410120

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 January 2024 and was last updated on 30 January 2024.

### INTRODUCTION

**Review question / Objective** Our aim was to explore the prevalence of parkinson's disease (PD) and intestinal diseases patients, including constipation, inflammatory bowel disease (IBD) and irritable bowel syndrome (IBS). We retrieved the observational studies in both PubMed and Embase, and conducted a meta-analysis of the association between intestinal diseases and the risk of PD, using the relative risk (RR).

**Condition being studied** Parkinson's disease (PD) is one of the most common neurodegenerative diseases. And more than 10 million people will suffer from PD by 2030. Constipation, inflammatory bowel disease (IBD) and irritable

bowel syndrome (IBS) are common intestinal comorbidities in PD patients. IBD is a disease characterized by chronic, nonspecific inflammation of the gastrointestinal tract and includes crohn's disease and ulcerative colitis. IBS is a chronic disease characterized by chronic or recurrent abdominal pain, bloating, mucus in feces and an erratic disturbance of defecation. Some researches suggested that intestinal diseases might be a cause of PD.

### METHODS

**Participant or population** Patients with constipation; patients with inflammatory bowel disease; patients with irritable bowel syndrome; patients with parkinson's disease; normal population.

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**Intervention** Only observational studies were included in this study.

**Comparator** We compared the incidence of Parkinson's disease in the normal population with intestinal diseases, including Constipation, inflammatory bowel disease and irritable bowel syndrome.

**Study designs to be included** We will include cohort study, case-control study and cross-sectional study.

**Eligibility criteria** The inclusion criteria were as follows: (1) cohort studies, case-control or cross-sectional studies; (2) constipation, IBD or IBS was the exposure factor, and PD was the outcome; (3) ORs, RRs, hazard ratios (HRs) or standardized incidence ratios (SIRs) of PD and exposure factors were reported; and (4) the total sample size was greater than 50.

**Information sources** We retrieved the literature in both PubMed and Embase from their inception until October 2023.

**Main outcome(s)** The number of included studies, characteristics of studies, quality of studies, risk of Parkinson's disease due to intestinal disorders.

**Quality assessment / Risk of bias analysis** The Newcastle-Ottawa scale (NOS) to assess the quality of case-control studies and cohort studies, and the Agency for Healthcare Research and Quality (AHRQ) tool was used to assess the quality of cross-sectional studies.

**Strategy of data synthesis** We used STATA 15.1 for statistical analysis. Between-study heterogeneity was analyzed by Cochran's Q statistic. When  $I^2 > 50$ , there was a high degree of heterogeneity between studies, and a random effects model was used. Otherwise, the fixed effects model was used. We used a tree diagram to describe the relative risk and 95% confidence intervals. Egger's and Begg's linear tests were conducted to assess publication bias. If there was publication bias, the number of missing studies was estimated using the trim-and-fill method to correct for bias.

**Subgroup analysis** We conducted subgroup analyses based on study design, age, and sex.

**Sensitivity analysis** We conducted a sensitivity analysis by omitting each study in each turn.

**Country(ies) involved** China.

**Keywords** Parkinson's disease; Intestinal diseases; Meta-analysis.

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